

THE ASTROPHYSICAL JOURNAL

AUTHOR INDEX

PARTS 1 & 2, VOLUMES 414-416

1993 SEPTEMBER 1 TO OCTOBER 20

- AARSETH, SVERRE J. An $O(N \log N)$ Integration Scheme for Collisional Stellar Systems. *Stephen L. W. McMillan & Sverre J. Aarseth*. 414, 200, 172-E1 (1993)
- ABADI, M. G. Large-Scale Structure in Biased Cold Dark Matter Cosmologies. *D. G. Lambas, M. G. Abadi, M. A. Nicotra, & P. B. Tissera*. 414, 30, 170-D6 (1993)
- ABRAHAM, ROBERTO G. Is the BL Lacertae Object AO 0235+164 Being Lensed by Its Intervening Mg II Absorber? *Roberto G. Abraham, Carolin S. Crawford, Michael R. Merrifield, John B. Hutchings, & Ian M. McHardy*. 415, 101, 186-C5 (1993)
- ACTON, L. W. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKOH.
- ACTON, LOREN W. Temperature and Density Structure of the 1991 November 2 Flare Observed by the YOHKOH Soft X-Ray Telescope and Hard X-Ray Telescope. *James M. McTiernan, Sharad R. Kane, Jon M. Loran, James R. Lemen, Loren W. Acton, Hirohisa Hara, Saku Tsuneta, & Takeo Kosugi*. 416, L91, 216-F6 (1993)
- AHERN, SEAN C. Prevention of High-Luminosity Carbon Stars by Hot Bottom Burning. *Arnold I. Boothroyd, I.-Juliana Sackmann, & Sean C. Aherm*. 416, 762, 212-G6 (1993)
- ALBERT, C. E. A Determination of the Distance to the High-Velocity Cloud Complex M. *Laura Danly, C. E. Albert, & K. D. Kuntz*. 416, L29, 207-D13 (1993)
- ALBRIGHT, GEARY E. Circumstellar Material in TX Ursae Majoris. *Geary E. Albright & Mercedes T. Richards*. 414, 830, 181-E6 (1993)
- ALEXANDER, P. A Two-Region Model of the Solar Wind with Collisionless Electron Heat Flux. *P. Alexander*. 414, 372, 174-E11 (1993)
- ALLAMANDOLA, L. J. Theoretical Modeling of the Infrared Fluorescence from Interstellar Polycyclic Aromatic Hydrocarbons. *W. A. Schutte, A. G. G. M. Tielens, & L. J. Allamandola*. 415, 397, 189-G12 (1993)
- ALLEN, RICHARD G. First Ultraviolet Spectropolarimetry of Radio-selected BL Lacertae Objects. *Paul S. Smith, Richard G. Allen, & J. R. P. Angel*. 415, L83, 199-F6 (1993)
- ALTROCK, R. C. Large-Scale Coronal Temperature and Density Distributions, 1984-1992. *M. Guhathakurta, R. R. Fisher, & R. C. Altrock*. 414, L145, 186-E7 (1993)
- AMENOMORI, M. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun. *M. Amenomori, Z. Cao, L. K. Ding, Z. Y. Feng, K. Hibino, N. Houa, Q. Huang, A. X. Huo, H. G. Jia, G. Z. Jiang, S. Q. Jiao, F. Kajino, K. Kasahara, Labaciren, D. M. Mei, L. Meng, X. R. Meng, Mimaciren, K. Mizutani, J. Mu, H. Nanjo, M. Nishizawa, Nusang, A. Oguro, M. Ohnishi, I. Ohta, T. Ouchi, J. R. Ren, T. Saito, M. Sakata, Z. Z. Shi, M. Shibata, T. Shirai, H. Sugimoto, X. X. Sun, K. Taira, Y. H. Tan, N. Tateyama, S. Torii, H. Wang, C. Z. Wen, Y. Yamamoto, X. Y. Yao, G. C. Yu, P. Yuan, T. Yuda, J. G. Zeng, C. S. Zhang, H. M. Zhang, L. Zhang, Zhasang, Zhaxiciren, & W. D. Zhou (The Tibet AS- γ Collaboration)*. 415, L147, 200-G1 (1993)
- ANDERSON, S. B. ROSAT High Resolution Imager Observations of PSR 0656+14. *S. B. Anderson, F. A. Córdova, G. G. Pavlov, C. R. Robinson, & R. J. Thompson, Jr.* 414, 867, 182-A12 (1993)
- ANDRÉ, P. The Contribution of Disks and Envelopes to the Millimeter Continuum Emission from Very Young Low-Mass Stars. *S. Terebey, C. J. Chandler, & P. André*. 414, 759, 180-F6 (1993)
- ANGEL, J. R. P. First Ultraviolet Spectropolarimetry of Radio-selected BL Lacertae Objects. *Paul S. Smith, Richard G. Allen, & J. R. P. Angel*. 415, L83, 199-F6 (1993)
- ANGELUCCI, FRANÇOISE. Disks around Pre-Main-Sequence Binary Systems: The Case of Haro 6-10. *François Ménard, Jean-Louis Monin, Françoise Angelucci, & Daniel Rouan*. 414, L117, 186-B5 (1993)
- ANNIS, J. The Complex, Gravitationally Lensed Arc System in the X-Ray-selected Cluster of Galaxies MS 0440+0204. *G. A. Luppino, I. M. Gioia, J. Annis, O. Le Fèvre, & F. Hammer*. 416, 444, 208-G8 (1993)
- ANTONUCCI, ROBERT. Hubble Space Telescope Ultraviolet Spectroscopy of the Highly Polarized but Quiescent Quasar OI 287. *Robert Antonucci, Anne L. Kinney, & Todd Hurt*. 414, 506, 177-E1 (1993)
- APPLEGATE, J. H. Formation of Planets around Pulsars. *M. Banii, M. A. Ruderman, J. Shaham, & J. H. Applegate*. 415, 779, 197-E6 (1993)
- APPLETON, P. N. Threshold Star-Formation Effects in the Peculiar Galaxy Arp 10 (= VV 362). *V. Charmandaris, P. N. Appleton, & A. P. Marston*. 414, 154, 172-A1 (1993)
- APPONI, A. J. The Millimeter-Wave Spectrum of AlOH. *A. J. Apponi, W. L. Barclay, Jr., & L. M. Ziurys*. 414, L129, 186-C11 (1993)
- ARAKAWA, E. T. Polycyclic Aromatic Hydrocarbons in the Atmospheres of Titan and Jupiter. *Carl Sagan, B. N. Khare, W. R. Thompson, G. D. McDonald, Michael R. Wing, Jeffrey L. Bada, Tuan Vo-Dinh, & E. T. Arakawa*. 414, 399, 175-A3 (1993)
- ARMSTRONG, J. T. The Asymmetric Envelope of γ Cassiopeiae Observed with the Mk III Optical Interferometer. *A. Quirrenbach, C. A. Hummel, D. F. Buscher, J. T. Armstrong, D. Mozurkewich, & N. M. Elias II*. 416, L25, 207-D7 (1993)
- ARNAU, ARTURO. Ab Initio Rotational Constants of Isocyanopolynes. *Arturo Arnau, Estanislao Silla, & Inaki Tuñón*. 415, L151, 200-G8 (1993)
- ARNETT, DAVID. On the Instability of Deflagration Fronts in White Dwarfs. *Eli Livne & David Arnett*. 415, L107, 200-B1 (1993)
- ASCHWANDEN, MARKUS J. Quasi-periodic Particle Injection into Coronal Loops. *Markus J. Aschwanden, Arnold O. Benz, Brian R. Dennis, & Victor Gaizauskas*. 416, 857, 214-B5 (1993)
- AUFENBERG, JASON P. On the Interpretation of the Ultraviolet Spectra of Symbiotic Stars and Recurrent Novae. *I. Steven N. Shore & Jason P. Aufenberg*. 416, 355, 205-D10 (1993)
- AUFDERHEIDE, M. B. The QCD Phase Transition and Supernova Core Collapse. *N. A. Gentile, M. B. Aufderheide, G. J. Mathews, F. D. Swesty, & G. M. Fuller*. 414, 701, 180-A3 (1993)
- AUSTIN, S. J. Interpretation of the Early Spectra of SN 1993J in M81. *E. Baron, P. H. Hauschildt, D. Branch, R. M. Wagner, S. J. Austin, A. V. Filippenko, & T. Matheson*. 416, L21, 207-D2 (1993)
- AXFORD, W. IAN. Synchrotron Radiation: An Inverse Compton Effect. *Richard Lieu & W. Ian Axford*. 416, 700, 212-B1 (1993)
- BAAN, WILLEM A. Formaldehyde Emission in Galaxies. *Willem A. Baan, Aubrey D. Haschick, & Robert Uglesich*. 415, 140, 186-G1 (1993)
- BAAS, F. Kiloparsec-Scale Molecular Gas Excitation in Spiral Galaxies. *W. F. Wall, D. T. Jaffe, F. N. Bash, F. P. Israel, P. R. Maloney, & F. Baas*. 414, 98, 171-C5 (1993)
- BABB, J. F. The Radiative Association of He⁺ and He and H⁺ and H. *P. C. Stancil, J. F. Babb, & A. Dalgarno*. 414, 672, 179-E8 (1993)
- BACHILLER, R. Shear in the IRAS 3282 Outflow. *M. Tafalla, R. Bachiller, J. Martín-Pintado, & M. C. H. Wright*. 415, L139, 200-F1 (1993)
- BADA, JEFFREY L. Polycyclic Aromatic Hydrocarbons in the Atmospheres of Titan and Jupiter. *Carl Sagan, B. N. Khare, W. R. Thompson, G. D. McDonald, Michael R. Wing, Jeffrey L. Bada, Tuan Vo-Dinh, & E. T. Arakawa*. 414, 399, 175-A3 (1993)

- BAHCALL, NETA A. The Relation between Velocity Dispersion and Temperature in Clusters: Limiting the Velocity Bias. *Lori M. Lubin & Neta A. Bahcall*. 415, L17, 191–G5 (1993)
- BALIUNAS, S. L. An Interpretation of Cycle Periods of Stellar Chromospheric Activity. *W. H. Soon, S. L. Baliunas, & Q. Zhang*. 414, L33, 175–F6 (1993)
- The Mount Wilson Observatory Metallicity Index, C_{RV} : Comparison with Other Photometric Systems. *W. H. Soon, Q. Zhang, S. L. Baliunas, & R. L. Kurucz*. 416, 787, 213–C1 (1993)
- BALLESTER, G. E. Detection of [O II] $\lambda 2471$ from the Io Plasma Torus. *M. A. McGrath, P. D. Feldman, D. F. Strobel, H. W. Moos, & G. E. Ballester*. 415, L55, 192–D7 (1993)
- BANDAY, A. Noncosmological Signal Contributions to the COBE DMR Anisotropy Maps. *C. L. Bennett, G. Hinshaw, A. Banday, A. Kogut, E. L. Wright, K. Loewenstein, & E. S. Cheng*. 414, L76, 185–D13 (1993)
- BANIA, T. M. A High-Resolution H I Survey of the Rosette Nebula. *Thomas A. Kuchar & T. M. Bania*. 414, 664, 179–D12 (1993)
- BANIT, M. Formation of Planets around Pulsars. *M. Banit, M. A. Ruderman, J. Shaham, & J. H. Applegate*. 415, 779, 197–E6 (1993)
- BARBERA, M. X-Ray Emission at the Low-Mass End: Results from an Extensive Einstein Observatory Survey. *M. Barbera, G. Micela, S. Sciortino, F. R. Harnden, Jr., & R. Rosner*. 414, 846, 181–F10 (1993)
- BARCLAY, W. L., JR. The Millimeter-Wave Spectrum of A10H. *A. J. Apponi, W. L. Barclay, Jr., & L. M. Ziurys*. 414, L129, 186–C11 (1993)
- BARON, E. Interpretation of the Early Spectra of SN 1993J in M81. *E. Baron, P. H. Hauschildt, D. Branch, R. M. Wagner, S. J. Austin, A. V. Filippenko, & T. Matheson*. 416, L21, 207–D2 (1993)
- BARSONY, MARY. Low-Mass Star Formation in Cooling Flow Galaxies. *James M. Schombert, Mary Barsony, & Patricia C. Hanlon*. 416, L61, 216–C7 (1993)
- BARSTOW, M. A. See HOLBERG, J. B., et al. Two New Extremely Iron-rich Hot DA White Dwarfs and the Nature of the EUV Opacity.
- BARSTOW, MARTIN A. Detection of the First Coronal X-Ray Source about a White Dwarf. *Thomas A. Fleming, Klaus Werner, & Martin A. Barstow*. 416, L79, 216–E6 (1993)
- BASH, F. N. Kiloparsec-Scale Molecular Gas Excitation in Spiral Galaxies. *W. F. Wall, D. T. Jaffe, F. N. Bash, F. P. Israel, P. R. Maloney, & F. Baas*. 414, 98, 171–C5 (1993)
- BASTIAN, T. S. The Center-to-Limb Brightness Variation of the Sun at $\lambda = 850$ Microns. *T. S. Bastian, M. W. Ewell, Jr., & H. Zirin*. 415, 364, 189–D13 (1993)
- BASU, RAHUL. High-Density Matter in the Chiral Sigma Model. *Pradip K. Sahu, Rahul Basu, & Bhaskar Datta*. 416, 267, 204–D6 (1993)
- BATUSKI, D. The Dynamics of the Galaxy Cluster Abell 2634. *J. Pinkney, G. Rhee, J. O. Burns, J. M. Hill, W. Oegerle, D. Batuski, & P. Hintzen*. 416, 36, 201–E2 (1993)
- BEATON, STUART P. Rotational Frequencies of Transition Metal Hydrides for Astrophysical Searches in the Far-Infrared. *John M. Brown, Stuart P. Beaton, & Kenneth M. Evenson*. 414, L125, 186–C6 (1993)
- BECKLIN, E. E. Submillimeter Studies of Main-Sequence Stars. *B. Zuckerman & E. E. Becklin*. 414, 793, 181–B4 (1993)
- BECKMAN, JOHN E. Star Formation in the Spiral Arms of NGC 4321. II. H I Distribution and Kinematics. *Johan H. Knapen, Jordi Cepa, John E. Beckman, M. Soledad del Rio, & Alan Pedlar*. 416, 563, 210–D1 (1993)
- BEERS, TIMOTHY C. Abundances of Four Ultra-Metal-Deficient Stars. *John E. Norris, Ruth C. Peterson, & Timothy C. Beers*. 415, 797, 197–F13 (1993)
- BENNETT, C. L. Noncosmological Signal Contributions to the COBE DMR Anisotropy Maps. *C. L. Bennett, G. Hinshaw, A. Banday, A. Kogut, E. L. Wright, K. Loewenstein, & E. S. Cheng*. 414, L76, 185–D13 (1993)
- BENTLEY, R. D. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKOH.
- BENZ, ARNOLD O. Quasi-periodic Particle Injection into Coronal Loops. *Markus J. Aschwanden, Arnold O. Benz, Brian R. Dennis, & Victor Gaizauskas*. 416, 857, 214–B5 (1993)
- BERGESON, S. D. Oscillator Strengths of the Si II 181 Nanometer Resonance Multiplet. *S. D. Bergeson & J. E. Lawler*. 414, L137, 186–D9 (1993)
- Transition Probabilities for the $3s^2 3p(2P^o) - 3s 3p^2(4P)$ Intersystem Lines of Si II. *Anthony G. Calamita, Peter L. Smith, & S. D. Bergeson*. 415, L59, 192–D12 (1993)
- BERTOLA, FRANCESCO. Dark Matter Halos in Elliptical Galaxies. *Francesco Bertola, Alessandro Pizzella, Massimo Persic, & Paolo Salucci*. 416, L45, 216–B1 (1993)
- BERTSCH, D. L. See NOLAN, P. L., et al. Observation of High-Energy Gamma Rays from the Quasi-stellar Object CTA 102.
- See THOMPSON, D. J., et al. EGRET Observations of Active Galactic Nuclei: 0836+710, 0454–234, 0804+499, 0906+430, 1510–089, and 2356+196.
- Diffuse Gamma-Ray Emission in the Galactic Plane from Cosmic-Ray, Matter, and Photon Interactions. *D. L. Bertsch, T. M. Dame, C. E. Fichtel, S. D. Hunter, P. Sreekumar, J. G. Stacy, & P. Thaddeus*. 416, 587, 210–F6 (1993)
- See LIN, Y. C., et al. EGRET Limits on High-Energy Gamma-Ray Emission from X-Ray- and Low-Energy Gamma-Ray-selected Seyfert Galaxies.
- BHATTACHARJEE, A. A Class of Three-dimensional Isothermal Laminated Equilibria and Their Stability. *Y. P. Chou, B. C. Low, & A. Bhattacharjee*. 416, 379, 205–F12 (1993)
- BICAY, M. D. A Physical Model of the Infrared-to-Radio Correlation in Galaxies. *G. Helou & M. D. Bica*. 415, 93, 186–B9 (1993)
- BICKNELL, GEOFFREY V. Shock Excitation of the Emission-Line Filaments in Centaurus A. *Ralph S. Sutherland, Geoffrey V. Bicknell, & Michael A. Dopita*. 414, 510, 177–E7 (1993)
- BIETENHOLZ, M. F. The Crab Nebula's Cosmic-Ray Acceleration Zone Revealed. *P. P. Kronberg, H. Lesch, P. F. Ortiz, & M. F. Bietenholz*. 416, 251, 204–B13 (1993)
- BINETTE, LUC. Effects of Internal Dust on the Narrow-Line Region Lyman and Balmer Decrements. *Luc Binette, John Wang, Montserrat Villar-Martin, Peter G. Martin, & Gladis Magris*. 414, 535, 177–G9 (1993)
- BIRKINSHAW, MARK. Null Geodesics in Perturbed Spacetimes. *Ted Pyne & Mark Birkinshaw*. 415, 459, 193–E7 (1993)
- BISNOVATYI-KOGAN, G. S. Stability of Dense Stellar Clusters against Relativistic Collapse. *G. S. Bisnovatyi-Kogan, M. Merafina, R. Ruffini, & E. Vesperini*. 414, 187, 172–C13 (1993)
- BJÖRNSSON, C.-I. Polarization of Compact Radio Sources. *C.-I. Björnsson*. 416, 104, 202–C11 (1993)
- BJORKMAN, K. S. Detection of Accreting Gas toward HD 45677: A Newly Recognized, Herbig Be Proto-Planetary System. *C. A. Grady, K. S. Bjorkman, D. Shepherd, R. E. Schulte-Ladbeck, M. R. Pérez, D. de Winter, & P. S. Thé*. 415, L39, 192–B6 (1993)
- BLADES, J. C. See KIRSHNER, ROBERT P., et al. SN 1992A: Ultraviolet and Optical Studies Based on HST, IUE, and CTIO Observations.
- BLAIR, WILLIAM P. The Spectrum of EZ Canis Majoris (HD 50896) to the Lyman Limit with the Hopkins Ultraviolet Telescope. *Stephan R. McCandless, Richard H. Buss, Jr., William P. Blair, Charles W. Bowers, Arthur F. Davidsen, Paul D. Feldman, & Jeffrey W. Kruk*. 416, 372, 205–F3 (1993)
- BODE, PAUL W. Simulations of Compact Groups of Galaxies: The Effect of the Dark Matter Distribution. *Paul W. Bode, Haldan N. Cohn, & Phyllis M. Lugger*. 416, 17, 201–C5 (1993)
- BODO, G. Radiative Instability in Synchrotron-emitting Plasmas. *P. Rossi, G. Bodo, S. Massaglia, & A. Ferrari*. 414, 112, 171–D7 (1993)
- BÖHM, K.-H. Ultraviolet Spectroscopy of Herbig-Haro Objects: Spatial Structure, Spectroscopic Diagnostics, and Variability. *K.-H. Böhm, A. Noriega-Crespo, & J. Solf*. 416, 647, 211–D11 (1993)
- BOGGESS, ALBERT. Faint Object Spectrograph Spectra of the UV Emission Lines in NGC 5548: Detection of Strong Narrow Components. *D. Michael Crenshaw, Albert Boggeess, & Chi-Chao Wu*. 416, L67, 216–D1 (1993)
- BOHLIN, RALPH C. Ultraviolet Photometry of OB Associations in M31. *Jesse K. Hill, Joan E. Isensee, Ralph C. Bohlin, Robert W. O'Connell, Morton S. Roberts, Andrew M. Smith, & Theodore P. Stecher*. 414, L9, 175–C11 (1993)

- BONET, JOSÉ A. A High-Resolution Study of Inhomogeneities in Sunspot Umbrae. *Michal Sobotta, José A. Bonet, & Manuel Vázquez*. 415, 832, 198-B13 (1993)
- BOOKBINDER, JAY A. A Tight Correlation between Radio and X-Ray Luminosities of M Dwarfs. *Manuel Güdel, Jürgen H. M. M. Schmitt, Jay A. Bookbinder, & Thomas A. Fleming*. 415, 236, 188-A1 (1993)
- BOOTHROYD, ARNOLD I. Prevention of High-Luminosity Carbon Stars by Hot Bottom Burning. *Arnold I. Boothroyd, I. Juliana Sackmann, & Sean C. Aherm*. 416, 762, 212-G6 (1993)
- BORKOWSKI, KAZIMIERZ J. *HST* Imaging of Hydrogen-poor Ejecta in Abell 30 and Abell 78: Wind-blown Cometary Structures. *Kazimierz J. Borkowski, J. Patrick Harrington, Zlatan Tsvetanov, & Robin E. S. Clegg*. 415, L47, 192-C4 (1993)
- BORNE, KIRK D. Ballistic Models for Radio Jets in Colliding Galaxies: 3C 278 (NGC 4782/4783). *Kirk D. Borne & Luis Colina*. 416, 157, 203-A8 (1993)
- BOWERS, CHARLES W. The Spectrum of EZ Canis Majoris (HD 50896) to the Lyman Limit with the Hopkins Ultraviolet Telescope. *Stephan R. McCandliss, Richard H. Buss, Jr., William P. Blair, Charles W. Bowers, Arthur F. Davidsen, Paul D. Feldman, & Jeffrey W. Kruk*. 416, 372, 205-F3 (1993)
- BOWMAN, H. B. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- BOWYER, S. *Extreme Ultraviolet Explorer* Observations of the RS Canum Venaticorum Systems AR Lacertae and II Pegasi. *R. J. Paterer, P. W. Vedder, P. Jelinsky, A. Brown, & S. Bowyer*. 414, L57, 185-B13 (1993)
- BOWYER, STUART. *Extreme Ultraviolet Emission from Late-Type Stars: Initial Results from Extreme Ultraviolet Explorer*. *Peter W. Vedder, Robert J. Paterer, Patrick Jelinsky, Alex Brown, & Stuart Bowyer*. 414, L61, 185-C5 (1993)
- In-Flight Performance and Preliminary Results from the Far Ultraviolet Space Telescope (Faust) Flown on ATLAS-1. *Stuart Bowyer, Timothy P. Sasseen, Michael Lampton, & Xiaoyi Wu*. 415, 875, 198-G12 (1993)
- BRAINERD, TEREASA G. The Redshift Space Power Spectrum of Galaxies in a Cold Dark Matter Universe. *Tereasa G. Brainerd & Jens V. Villumsen*. 415, L67, 199-D8 (1993)
- BRANCH, D. Interpretation of the Early Spectra of SN 1993J in M81. *E. Baron, P. H. Hauschildt, D. Branch, R. M. Wagner, S. J. Austin, A. V. Filippenko, & T. Matheson*. 416, L21, 207-D2 (1993)
- BRANCH, DAVID. See KIRSHNER, ROBERT P., et al. SN 1992A: Ultraviolet and Optical Studies Based on *HST*, *IUE*, and CTIO Observations.
- BRANDT, J. C. The Disconnection Events of 1986 April 13–18 and the Cessation of Plasma Tail Activity in Comet Halley in 1986 May. *Y. Yi, J. C. Brandt, C. E. Randall, & M. Snow*. 414, 883, 182-C6 (1993)
- BREGMAN, J. D. Infrared Spectra of Transition Objects and the Composition and Evolution of Carbon Dust. *R. H. Buss, Jr., A. G. G. M. Tielens, M. Cohen, M. W. Werner, J. D. Bregman, & F. C. Witteborn*. 415, 250, 188-B3 (1993)
- BREGMAN, JOEL N. X-Ray Emission from the Starburst Galaxy IC 342. *Joel N. Bregman, Caroline V. Cox, & Kohji Tomisaka*. 415, L79, 199-E13 (1993)
- BRIGGS, F. H. Arecibo Observation of B2 0902+343 in the 21 Centimeter Line at Redshift 3.4. *F. H. Briggs, E. Sorar, & A. Taramopoulos*. 415, L99, 200-A2 (1993)
- BRIGGS, M. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- BROTHERTON, M. S. Statistics of QSO Broad Emission-Line Profiles. I. The C IV $\lambda 1549$ Line and the $\lambda 1400$ Feature. *Beverly J. Willis, M. S. Brotherton, D. Fang, Charles C. Steidel, & Wallace L. W. Sargent*. 415, 563, 194-G8 (1993)
- BROWN, A. *Extreme Ultraviolet Explorer* Observations of the RS Canum Venaticorum Systems AR Lacertae and II Pegasi. *R. J. Paterer, P. W. Vedder, P. Jelinsky, A. Brown, & S. Bowyer*. 414, L57, 185-B13 (1993)
- BROWN, ALEX. *Extreme Ultraviolet Emission from Late-Type Stars: Initial Results from Extreme Ultraviolet Explorer*. *Peter W. Vedder, Robert J. Paterer, Patrick Jelinsky, Alex Brown, & Stuart Bowyer*. 414, L61, 185-C5 (1993)
- BROWN, C. M. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKO.
- BROWN, JOHN M. Rotational Frequencies of Transition Metal Hydrides for Astrophysical Searches in the Far-Infrared. *John M. Brown, Stuart P. Beaton, & Kenneth M. Evenson*. 414, L125, 186-C6 (1993)
- BROWN, L. F. Milliarcsecond Polarization Structure of 24 Objects from the Pearson-Readhead Sample of Bright Extragalactic Radio Sources. I. The Images. *T. V. Cawthorne, J. F. C. Wardle, D. H. Roberts, D. C. Gabuzda, & L. F. Brown*. 416, 496, 209-D11 (1993)
- BRUNER, M. E. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKO.
- BRUZUAL A., GUSTAVO. Counter-Evolution of Faint Field Galaxies. *David C. Koo, Caryl Gronwall, & Gustavo Bruzual A.* 415, L21, 191-G10 (1993)
- BUCKLEY, D. A. H. See HOLBERG, J. B., et al. Two New Extremely Iron-rich Hot DA White Dwarfs and the Nature of the EUV Opacity.
- BÜTTGENBACH, THOMAS H. The Detection of [C I] in Molecular Outflows Associated with Young Stellar Objects. *Christopher K. Walker, Gopal Narayanan, Thomas H. Büttgenbach, John E. Carlstrom, Jocelyn Keene, & T. G. Phillips*. 415, 672, 196-B10 (1993)
- Atomic Carbon in the Envelope of IRC +10216. *Jocelyn Keene, K. Young, T. G. Phillips, Thomas H. Büttgenbach, & John E. Carlstrom*. 415, L131, 200-E1 (1993)
- BURNS, J. O. The Dynamics of the Galaxy Cluster Abell 2634. *J. Pinkney, G. Rhee, J. O. Burns, J. M. Hill, W. Oegerle, D. Batuski, & P. Hintzen*. 416, 36, 201-E2 (1993)
- 3C 317: An Amorphous Radio Source in the Cooling Flow Cluster Abell 2052. *Jun-Hui Zhao, Dean M. Sumi, J. O. Burns, & Nebojsa Duric*. 416, 51, 201-F7 (1993)
- BURROWS, A. The Stellar Population in the ρ Ophiuchi Cluster. *F. Comerón, G. H. Rieke, A. Burrows, & M. J. Rieke*. 416, 185, 203-D1 (1993)
- BURROWS, ADAM. A Theory of Supernova Explosions. *Adam Burrows & John Goshy*. 416, L75, 216-E1 (1993)
- BUSCHER, D. F. The Asymmetric Envelope of γ Cassiopeiae Observed with the Mk III Optical Interferometer. *A. Quirrenbach, C. A. Hummel, D. F. Buscher, J. T. Armstrong, D. Mozurkewich, & N. M. Elias II*. 416, L25, 207-D7 (1993)
- BUSS, R. H., JR. Infrared Spectra of Transition Objects and the Composition and Evolution of Carbon Dust. *R. H. Buss, Jr., A. G. G. M. Tielens, M. Cohen, M. W. Werner, J. D. Bregman, & F. C. Witteborn*. 415, 250, 188-B3 (1993)
- BUSS, RICHARD H., JR. The Spectrum of EZ Canis Majoris (HD 50896) to the Lyman Limit with the Hopkins Ultraviolet Telescope. *Stephan R. McCandliss, Richard H. Buss, Jr., William P. Blair, Charles W. Bowers, Arthur F. Davidsen, Paul D. Feldman, & Jeffrey W. Kruk*. 416, 372, 205-F3 (1993)
- BUTLER, R. PAUL. Cepheid Velocity Curves from Lines of Different Excitation and Ionization. I. Observations. *R. Paul Butler*. 415, 323, 189-A7 (1993)
- CACCIANIGA, A. Unified Model for X-Ray- and Radio-selected BL Lacertae Objects. *A. Celotti, L. Maraschi, G. Ghisellini, A. Caccianiga, & T. Maccacaro*. 416, 118, 202-D13 (1993)
- CADITZ, DAVID. Smoothed Nonparametric Estimation of the Luminosity Function for Flux-limited Samples. *David Cadiz & Vahé Petrosian*. 416, 450, 209-A1 (1993)
- CALAMAI, ANTHONY G. Transition Probabilities for the $3s^2 3p(^2P^o) - 3s 3p^2(^4P)$ Intersystem Lines of Si II. *Anthony G. Calamai, Peter L. Smith, & S. D. Bergeson*. 415, L59, 192-D12 (1993)
- CALVET, NURIA. The Embedded Young Stars in the Taurus-Auriga Molecular Cloud. I. Models for Spectral Energy Distributions. *Scott J. Kenyon, Nuria Calvet, & Lee Hartmann*. 414, 676, 179-F1 (1993)
- CANIZARES, CLAUDE R. High-Resolution X-Ray Spectroscopy of the Supernova Remnant N132D. *Una Hwang, John P. Hughes, Claude R. Canizares, & Thomas H. Markert*. 414, 219, 172-F11 (1993)
- CANTÓ, J. The Triple Radio Continuum Source in Serpens: The Birth of a Herbig-Haro System? *S. Curiel, L. F. Rodríguez, J. M. Moran, & J. Cantó*. 415, 191, 187-D5 (1993)

- CANTÓ, JORGE. Upper Limits to the Detection of Ammonia from Protoplanetary Disks around HL Tauri and L1551-IRS 5. *José F. Gómez, José M. Torrelles, Paul T. P. Ho, Luis F. Rodríguez, & Jorge Cantó*. 414, 333, 174-B6 (1993)
- CANUTO, V. M. Turbulent Convection with Overshooting: Reynolds Stress Approach. II. *V. M. Canuto*. 416, 331, 205-B12 (1993)
- CANZIAN, BLAISE. A New Way to Locate Corotation Resonances in Spiral Galaxies. *Blaise Canzian*. 414, 487, 177-C4 (1993)
- CAO, Z. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- CAPUZZO-DOLCETTA, ROBERTO. The Evolution of the Globular Cluster System in a Triaxial Galaxy: Can a Galactic Nucleus Form by Globular Cluster Capture? *Roberto Capuzzo-Dolcetta*. 415, 616, 195-D13 (1993)
- CARAVEO, PATRIZIA A. Associating Young Pulsars and Supernova Remnants: PSR 1610-50 and the Case for High-Velocity Pulsars. *Patrizia A. Caraveo*. 415, L111, 200-B6 (1993)
- CARDELLI, JASON A. Ultraviolet Transitions of Low Condensation Temperature Heavy Elements and New Data for Interstellar Arsenic, Selenium, Tellurium, and Lead. *Jason A. Cardelli, S. R. Federman, David L. Lambert, & C. E. Theodosiou*. 416, L41, 207-F5 (1993)
- CARLSTROM, JOHN E. The Detection of [C I] in Molecular Outflows Associated with Young Stellar Objects. *Christopher K. Walker, Gopal Narayanan, Thomas H. Büttgenbach, John E. Carlstrom, Jocelyn Keene, & T. G. Phillips*. 415, 672, 196-B10 (1993)
- Atomic Carbon in the Envelope of IRC +10216. *Jocelyn Keene, K. Young, T. G. Phillips, Thomas H. Büttgenbach, & John E. Carlstrom*. 415, L131, 200-E1 (1993)
- CARONE, T. E. Observations of PKS 2155-304 with the Extreme Ultraviolet Explorer. *H. L. Marshall, T. E. Carone, & A. Fruscione*. 414, L53, 185-B7 (1993)
- CARPENTER, K. G. A Search for Proton Beams during Flares on AU Microscopii. *R. D. Robinson, K. G. Carpenter, B. E. Woodgate, & S. P. Maran*. 414, 872, 182-B5 (1993)
- CASANOVA, SOPHIE. ROSAT X-Ray Study of the Chamaeleon I Dark Cloud. I. The Stellar Population. *Eric D. Feigelson, Sophie Casanova, Thierry Montmerle, & Jean Guibert*. 416, 623, 211-B8 (1993)
- CAVALIERE, A. Distant Clusters of Galaxies Detected by X-Rays. *A. Cavaliere, S. Colafrancesco, & N. Menci*. 415, 50, 185-F1 (1993)
- CAWTHORNE, T. V. Milliarcsecond Polarization Structure of 24 Objects from the Pearson-Readhead Sample of Bright Extragalactic Radio Sources. I. The Images. *T. V. Cawthorne, J. F. C. Wardle, D. H. Roberts, D. C. Gabuzda, & L. F. Brown*. 416, 496, 209-D11 (1993)
- Milliarcsecond Polarization Structure of 24 Objects from the Pearson-Readhead Sample of Bright Extragalactic Radio Sources. II. Discussion. *T. V. Cawthorne, J. F. C. Wardle, D. H. Roberts, & D. C. Gabuzda*. 416, 519, 209-G5 (1993)
- CECIL, GERALD. Observations of Entrainment and Time Variability in the HH 47 Jet. *Patrick Hartigan, Jon A. Morse, Steve Heathcote, & Gerald Cecil*. 414, L121, 186-B11 (1993)
- CELOTTI, A. Unified Model for X-Ray- and Radio-selected BL Lacertae Objects. *A. Celotti, L. Maraschi, G. Ghisellini, A. Caccianiga, & T. Maccacaro*. 416, 118, 202-D13 (1993)
- OSSE Observations of the Bright Seyfert 1 Galaxy IC 4329A. *A. C. Fabian, K. Nandra, A. Celotti, M. J. Rees, J. E. Grove, & W. N. Johnson*. 416, L57, 216-C1 (1993)
- CEN, RENYUE. A Cosmological Hydrodynamic Code Based on the Total Variation Diminishing Scheme. *Dongsu Ryu, Jeremiah P. Ostriker, Hyesung Kang, & Renyue Cen*. 414, 1, 170-B1 (1993)
- A Hydrodynamic Treatment of the Tilted Cold Dark Matter Cosmological Scenario. *Renyue Cen & Jeremiah P. Ostriker*. 414, 407, 176-C1 (1993)
- A Hydrodynamic Approach to Cosmology: The Primeval Baryon Isocurvature Model. *Renyue Cen, Jeremiah P. Ostriker, & P. J. E. Peebles*. 415, 423, 193-B5 (1993)
- A Hydrodynamic Approach to Cosmology: Nonlinear Effects on Cosmic Backgrounds in the Cold Dark Matter Model. *Roberto Scaramella, Renyue Cen, & Jeremiah P. Ostriker*. 416, 399, 208-B9 (1993)
- CENTRELLA, JOAN M. Gravitational Radiation from Nonaxisymmetric Collisions of Neutron Stars. *Joan M. Centrella & Stephen L. W. McMillan*. 416, 719, 212-C10 (1993)
- CEPA, JORDI. Star Formation in the Spiral Arms of NGC 4321. II. H I Distribution and Kinematics. *Johan H. Knapen, Jordi Cepa, John E. Beckman, M. Soledad del Rio, & Alan Pedlar*. 416, 563, 210-D1 (1993)
- CHABRIER, GILLES. Quantum Effects in Dense Coulombic Matter: Application to the Cooling of White Dwarfs. *Gilles Chabrier*. 414, 695, 179-G9 (1993)
- CHALLIS, PETER M. See KIRSHNER, ROBERT P., et al. SN 1992A: Ultraviolet and Optical Studies Based on HST, IUE, and CTIO Observations.
- CHANDLER, C. J. The Contribution of Disks and Envelopes to the Millimeter Continuum Emission from Very Young Low-Mass Stars. *S. Terebey, C. J. Chandler, & P. André*. 414, 759, 180-F6 (1993)
- CHANDLER, CLAIRE J. The Small-Scale Structure and Kinematics of B335. *Claire J. Chandler & Anneila I. Sargent*. 414, L29, 175-E13 (1993)
- CHAPUIS, C. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- CHARLOT, STÉPHANE. Lyman-Alpha Emission from Galaxies. *Stéphane Charlot & S. Michael Fall*. 415, 580, 195-A13 (1993)
- CHARMANDARIS, V. Threshold Star-Formation Effects in the Peculiar Galaxy Arp 10 (= VV 362). *V. Charmandaris, P. N. Appleton, & A. P. Marston*. 414, 154, 172-A1 (1993)
- CHEN, A. See HOLBERG, J. B., et al. Two New Extremely Iron-rich Hot DA White Dwarfs and the Nature of the EUV Opacity.
- CHEN, H. An IRAS Sample from Co-added Images of L1641. *H. Chen, A. T. Tokunaga, & Y. Fukui*. 416, 235, 204-A4 (1993)
- CHEN, P. S. Circumstellar Properties of S Stars. I. Dust Features. *P. S. Chen & Sun Kwok*. 416, 769, 213-A1 (1993)
- CHENG, E. S. Noncosmological Signal Contributions to the COBE DMR Anisotropy Maps. *C. L. Bennett, G. Hinshaw, A. Banday, A. Kogut, E. L. Wright, K. Loewenstein, & E. S. Cheng*. 414, L76, 185-D13 (1993)
- CHERNIN, LAWRENCE M. Properties of Jet-driven Molecular Outflows. *Colin R. Masson & Lawrence M. Chernin*. 414, 230, 172-G10 (1993)
- CHEVALIER, ERIC. Vortex Pinning by Quenched Randomness in Neutron Stars. *Eric Chevalier*. 414, L113, 186-A13 (1993)
- CHEVALIER, ROGER A. See KIRSHNER, ROBERT P., et al. SN 1992A: Ultraviolet and Optical Studies Based on HST, IUE, and CTIO Observations.
- Gravitational Collapse of an Isothermal Sphere. *Prudence N. Foster & Roger A. Chevalier*. 416, 303, 204-G8 (1993)
- CHIEFFI, ALESSANDRO. The α -enhanced Isochrones and Their Impact on the Fits to the Galactic Globular Cluster System. *Maurizio Salaris, Alessandro Chieffi, & Oscar Straniero*. 414, 580, 178-D10 (1993)
- CHOU, Y. P. A Class of Three-dimensional Isothermal Laminated Equilibria and Their Stability. *Y. P. Chou, B. C. Low, & A. Bhattacharjee*. 416, 379, 205-F12 (1993)
- CHRISTODOULOU, DIMITRIS M. Kinematical Modeling of Warps in the H I Disks of Galaxies. *Dimitris M. Christodoulou, Joel E. Tohline, & Thomas Y. Steiman-Cameron*. 416, 74, 202-A7 (1993)
- CHRISTOU, JULIAN C. Restoration of Astronomical Images by Iterative Blind Deconvolution. *Stuart M. Jefferies & Julian C. Christou*. 415, 862, 198-F9 (1993)
- CHU, YOU-HUA. Hidden Supernova Remnants in the Large Magellanic Cloud H II Complex N44. *You-Hua Chu, Mordecai-Mark Mac Low, Guillermo Garcia-Segura, Bart Wakker, & Robert C. Kennicutt, Jr.* 414, 213, 172-F2 (1993)
- CHUGAI, N. N. X-Rays from SN 1986J: Emission of a Shocked Clumpy Wind. *N. N. Chugai*. 414, L101, 185-G10 (1993)
- CIARDULLO, ROBIN. The Radial Velocities of Planetary Nebulae in NGC 3379. *Robin Ciardullo, George H. Jacoby, & Herwig B. Dejonghe*. 414, 454, 176-G3 (1993)
- The Planetary Nebula System and Dynamics of NGC 5128. I. Planetary Nebulae as Standard Candles. *Xiaohui Hui, Holland C. Ford, Robin Ciardullo, & George H. Jacoby*. 414, 463, 177-A1 (1993)

- Planetary Nebulae as Standard Candles. IX. The Distance to the Fornax Cluster. *Russet McMillan, Robin Ciardullo, & George H. Jacoby.* 416, 62, 201-G7 (1993)
- CIOTTI, LUCA. Transverse Dissections of the Fundamental Planes of Elliptical Galaxies and Clusters of Galaxies. *Alvio Renzini & Luca Ciotti.* 416, L49, 216-B6 (1993)
- CLAYTON, DONALD D. On ^{26}Al and Other Short-lived Interstellar Radioactivity. *Donald D. Clayton, Dieter H. Hartmann, & Mark D. Leising.* 415, L25, 192-A1 (1993)
- CLEGG, ROBIN E. S. *HST* Imaging of Hydrogen-poor Ejecta in Abell 30 and Abell 78: Wind-blown Cometary Structures. *Kazimierz J. Borkowski, J. Patrick Harrington, Zlatan Tsvetanov, & Robin E. S. Clegg.* 415, L47, 192-C4 (1993)
- COHEN, M. Infrared Spectra of Transition Objects and the Composition and Evolution of Carbon Dust. *R. H. Buss, Jr., A. G. G. M. Tielens, M. Cohen, M. W. Werner, J. D. Bregman, & F. C. Witteborn.* 415, 250, 188-B3 (1993)
- COHEN, ROSS D. Strong [Fe II] Emission from NGC 1275. *Richard J. Rudy, Ross D. Cohen, George S. Rossano, Peter Erwin, R. C. Puetter, Matthew A. Greenhouse, & Charles E. Woodward.* 414, 527, 177-F13 (1993)
- COHN, HALDAN N. Simulations of Compact Groups of Galaxies: The Effect of the Dark Matter Distribution. *Paul W. Bode, Haldan N. Cohn, & Phyllis M. Lugger.* 416, 17, 201-C5 (1993)
- COLAFRANCESCO, S. Distant Clusters of Galaxies Detected by X-Rays. *A. Cavaliere, S. Colafrancesco, & N. Menci.* 415, 50, 185-F1 (1993)
- COLBERT, EDWARD. Soft X-Ray Spectra of Seyfert 2 Galaxies. *John S. Mulchaey, Edward Colbert, Andrew S. Wilson, Richard F. Mushotzky, & Kimberly A. Weaver.* 414, 144, 171-G1 (1993)
- SN 1978K: An Extraordinary Supernova in the Nearby Galaxy NGC 1313. *Stuart Ryder, Lister Staveley-Smith, Michael Dopita, Robert Petre, Edward Colbert, David Malin, & Eric Schlegel.* 416, 167, 203-B6 (1993)
- COLINA, LUIS. Ballistic Models for Radio Jets in Colliding Galaxies: 3C 278 (NGC 4782/4783). *Kirk D. Borne & Luis Colina.* 416, 157, 203-A8 (1993)
- COLLURA, A. *ROSAT* X-Ray Detection of ϵ Tauri: Revisiting the Coronal and Transition Region Emission of the Hyades Giants. *A. Collura, A. Maggio, G. Micela, S. Sciortino, F. R. Harnden, Jr., & R. Rosner.* 416, 204, 203-E8 (1993)
- COLPI, MONICA. A Hydrodynamical Model for the Explosion of a Neutron Star Just below the Minimum Mass. *Monica Colpi, Stuart L. Shapiro, & Saul A. Teukolsky.* 414, 717, 180-B10 (1993)
- COMERON, F. The Stellar Population in the p Ophiuchi Cluster. *F. Comeron, G. H. Rieke, A. Burrows, & M. J. Rieke.* 416, 185, 203-D1 (1993)
- CONTI, PETER S. The "Baldwin Effect" in Wolf-Rayet Stars. *Patrick Morris, Peter S. Conti, Henny J. G. L. M. Lamers, & Gloria Koenigsberger.* 414, L25, 175-E7 (1993)
- CORBELLI, EDVIGE. Neutral Hydrogen Absorption and Emission in the Quasar/Galaxy Pair 3C 275.1/NGC 4651. *Stephen E. Schneider & Edvige Corbelli.* 414, 500, 177-D7 (1993)
- CÓRDOVA, F. A. *ROSAT* High Resolution Imager Observations of PSR 0656+14. *S. B. Anderson, F. A. Córdoba, G. G. Pavlov, C. R. Robinson, & R. J. Thompson, Jr.* 414, 867, 182-A12 (1993)
- CORK, C. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- COURTEAU, STÉPHANE. The Rotation Curves of Galaxies at Intermediate Redshift. *Nicole P. Vogt, Terry Herter, Martha P. Haynes, & Stéphane Courteau.* 415, L95, 199-G11 (1993)
- COWIE, L. L. Galaxy Number Counts from $K = 10$ to $K = 23$. *J. P. Gardner, L. L. Cowie, & R. J. Wainscoat.* 415, L9, 191-F7 (1993)
- COX, CAROLINE V. X-Ray Emission from the Starburst Galaxy IC 342. *Joel N. Bregman, Caroline V. Cox, & Kohji Tomisaka.* 415, L79, 199-E13 (1993)
- CRAWFORD, CAROLIN S. Is the BL Lacertae Object AO 0235+164 Being Lensed by Its Intervening Mg II Absorber? *Roberto G. Abraham, Carolin S. Crawford, Michael R. Merrifield, John B. Hutchings, & Ian M. McHardy.* 415, 101, 186-C5 (1993)
- CRENSHAW, D. MICHAEL. Faint Object Spectrograph Spectra of the Broad Fe II Absorption Lines in the Remnant of SN 1006. *Chi-Chao Wu, D. Michael Crenshaw, Robert A. Fesen, Andrew J. S. Hamilton, & Craig L. Sarazin.* 416, 247, 204-B7 (1993)
- Faint Object Spectrograph Spectra of the UV Emission Lines in NGC 5548: Detection of Strong Narrow Components. *D. Michael Crenshaw, Albert Boggess, & Chi-Chao Wu.* 416, L67, 216-D1 (1993)
- CRISTIANI, STEFANO. The Lyman-Alpha Forest of PKS 2126-158 at High Resolution. *Emanuele Giallongo, Stefano Cristiani, Adriano Fontana, & Dario Trévese.* 416, 137, 202-F10 (1993)
- CULHANE, J. L. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKOH.
- CULLY, SCOTT L. *Extreme Ultraviolet Explorer* Deep Survey Observations of a Large Flare on AU Microscopii. *Scott L. Cully, Oswald H. W. Siegmund, Peter W. Vedder, & John V. Vallega.* 414, L49, 185-B1 (1993)
- CURIEL, S. The Triple Radio Continuum Source in Serpens: The Birth of a Herbig-Haro System? *S. Curiel, L. F. Rodríguez, J. M. Moran, & J. Cantó.* 415, 191, 187-D5 (1993)
- DA COSTA, G. S. The Age of the Large Magellanic Cloud Cluster NGC 1953. *J. R. Mould, D. A. Xystus, G. S. Da Costa, & R. A. Schommer.* 416, 582, 210-E12 (1993)
- DALCANTON, JULIANNE J. An Argument against Mergers of the Faint Blue Galaxies. *Julianne J. Dalcanton.* 415, L87, 199-F13 (1993)
- DALGARNO, A. The Radiative Association of He^+ and He and H^+ and H . *P. C. Stancil, J. F. Babb, & A. Dalgarno.* 414, 672, 179-E8 (1993)
- DAME, T. M. Diffuse Gamma-Ray Emission in the Galactic Plane from Cosmic-Ray, Matter, and Photon Interactions. *D. L. Bertsch, T. M. Dame, C. E. Fichtel, S. D. Hunter, P. Sreekumar, J. G. Stacy, & P. Thaddeus.* 416, 587, 210-F6 (1993)
- DANLY, LAURA. A Determination of the Distance to the High-Velocity Cloud Complex M. *Laura Danly, C. E. Albert, & K. D. Kuntz.* 416, L29, 207-D13 (1993)
- DATTA, BHASKAR. High-Density Matter in the Chiral Sigma Model. *Pradip K. Sahu, Rahul Basu, & Bhaskar Datta.* 416, 267, 204-D6 (1993)
- DAVIDSEN, ARTHUR F. The Spectrum of EZ Canis Majoris (HD 50896) to the Lyman Limit with the Hopkins Ultraviolet Telescope. *Stephan R. McCandliss, Richard H. Buss, Jr., William P. Blair, Charles W. Bowers, Arthur F. Davidsen, Paul D. Feldman, & Jeffrey W. Kruk.* 416, 372, 205-F3 (1993)
- DAVILA, JOSEPH M. Coronal Heating by the Resonant Absorption of Alfvén Waves: Importance of the Global Mode and Scaling Laws. *Richard S. Steinolfson & Joseph M. Davila.* 415, 354, 189-D1 (1993)
- DE ALMEIDA, A. A. What Is New about the New Comet Yanaka (1988)? *J. Mayo Greenberg, P. D. Singh, & A. A. de Almeida.* 414, L45, 175-G7 (1993)
- DEGENHARDT, DETLEV. The Magnetohydrodynamics of Umbral Flux Tubes. II. Spectroscopic Properties. *Detlev Degenhardt & Bruce W. Lites.* 416, 875, 214-C11 (1993)
- DEGUCHI, SHUJI. High Spatial Resolution Observations of CO in CRL 618. *Katsunori M. Shibata, Shuji Deguchi, Naomi Hirano, Osamu Kameya, & Shin'ichi Tamura.* 415, 708, 196-F1 (1993)
- DEICH, W. T. S. A Search for Pulsars at High Galactic Latitudes. *S. E. Thorsett, W. T. S. Deich, S. R. Kulkarni, J. Navarro, & G. Vasisht.* 416, 182, 203-C10 (1993)
- DE JAGER, O. C. New Upper Limits on Intergalactic Infrared Radiation from High-Energy Astrophysics. *F. W. Stecker & O. C. De Jager.* 415, L71, 199-E1 (1993)
- DEJONGHE, HERWIG B. The Radial Velocities of Planetary Nebulae in NGC 3379. *Robin Ciardullo, George H. Jacoby, & Herwig B. Dejonghe.* 414, 454, 176-G3 (1993)
- DELIYANNIS, CONSTANTINE P. Evidence for a Dispersion in the Lithium Abundances of Extreme Halo Stars. *Constantine P. Deliyannis, M. H. Pinsonneault, & Douglas K. Duncan.* 414, 740, 180-D10 (1993)
- Lithium in the Hyades. I. New Observations. *J. A. Thorburn, L. M. Hobbs, Constantine P. Deliyannis, & M. H. Pinsonneault.* 415, 150, 186-G12 (1993)
- DENKER, A. See DROTLEFF, H. W., et al. Reaction Rates of the s-Process Neutron Sources $^{22}\text{Ne}(\alpha, n)^{25}\text{Mg}$ and $^{13}\text{C}(\alpha, n)^{16}\text{O}$.
- DENNIS, BRIAN R. Quasi-periodic Particle Injection into Coronal Loops. *Marius J. Aschwanden, Arnold O. Benz, Brian R. Dennis, & Victor Gaizauskas.* 416, 857, 214-B5 (1993)

- DERMER, CHARLES D. Model for the High-Energy Emission from Blazars. *Charles D. Dermer & Reinhard Schlickeiser*. 416, 458, 209-A11 (1993)
- DE VAUCOULEURS, G. The Extragalactic Distance Scale. VIII. A Comparison of Distance Scales. *G. de Vaucouleurs*. 415, 10, 185-B12 (1993)
- Specific Frequencies of Globular Clusters in Elliptical Galaxies: A New Test of the Extragalactic Distance Scale. *G. de Vaucouleurs*. 415, 33, 185-D9 (1993)
- On the Specific Frequencies of Globular Clusters in the Galaxy and in Messier 31. *G. de Vaucouleurs*. 415, 40, 185-E3 (1993)
- DE WINTER, D. Detection of Accreting Gas toward HD 45677: A Newly Recognized, Herbig Be Proto-Planetary System. *C. A. Grady, K. S. Bjorkman, D. Shepherd, R. E. Schulte-Ladbeck, M. R. Pérez, D. de Winter, & P. S. Thé*. 415, L39, 192-B6 (1993)
- DEY, ARJUN. Induced Star Formation in a Radio Lobe of 3C 285? *Wil J. M. van Breugel & Arjun Dey*. 414, 563, 178-C3 (1993)
- DING, L. K. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- DINGUS, B. L. See THOMPSON, D. J., et al. EGRET Observations of Active Galactic Nuclei: 0836+710, 0454-234, 0804+499, 0906+430, 1510-089, and 2356+196.
- See LIN, Y. C., et al. EGRET Limits on High-Energy Gamma-Ray Emission from X-Ray- and Low-Energy Gamma-Ray-selected Seyfert Galaxies.
- DONAHUE, MEGAN. Calcium Depletion in Cooling-Flow Nebulae and the Origin of the Line-emitting Gas. *Megan Donahue & G. Mark Voit*. 414, L17, 175-D11 (1993)
- DONE, C. The Iron K Line as a Probe of Beamed X-Ray Emission in Active Galactic Nuclei. *T. Yaqoob, B. McKernan, C. Done, P. J. Serlemis, & K. A. Weaver*. 416, L5, 207-B7 (1993)
- DOPITA, MICHAEL. SN 1978K: An Extraordinary Supernova in the Nearby Galaxy NGC 1313. *Stuart Ryder, Lister Staveley-Smith, Michael Dopita, Robert Petre, Edward Colbert, David Malin, & Eric Schlegel*. 416, 167, 203-B6 (1993)
- DOPITA, MICHAEL A. Shock Excitation of the Emission-Line Filaments in Centaurus A. *Ralph S. Sutherland, Geoffrey V. Bicknell, & Michael A. Dopita*. 414, 510, 177-E7 (1993)
- DOSCHEK, G. A. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKOH. *G. A. Doschek, K. T. Strong, R. D. Bentley, C. M. Brown, J. L. Culhane, A. Fludra, E. Hiei, J. Lang, J. T. Mariska, K. J. H. Phillips, C. D. Pike, A. C. Sterling, T. Watanabe, L. W. Acton, M. E. Bruner, T. Hirayama, S. Tsuneta, E. Rolli, T. Kosugi, M. Yoshimori, H. S. Hudson, T. R. Metcalf, J.-P. Wuelser, Y. Uchida, & Y. Ogawara*. 416, 845, 214-A1 (1993)
- DOWNES, D. Molecular Gas Mass and Far-Infrared Emission from Distant Luminous Galaxies. *D. Downes, P. M. Solomon, & S. J. E. Radford*. 414, L13, 175-D6 (1993)
- DRAINE, B. T. On Graphite and the 2175 Å Extinction Profile. *B. T. Draine & Sangeeta Malhotra*. 414, 632, 179-B1 (1993)
- DREIZLER, S. See HOLBERG, J. B., et al. Two New Extremely Iron-rich Hot DA White Dwarfs and the Nature of the EUV Opacity.
- DRESSEL, L. L. The Genesis of Starbursts and Infrared Emission in the Centers of Galaxies. *C. M. Telesco, L. L. Dressel, & R. D. Wolstencroft*. 414, 120, 171-E3 (1993)
- DROTLEFF, H. W. Reaction Rates of the s-Process Neutron Sources $^{22}\text{Ne}(\alpha, n)^{25}\text{Mg}$ and $^{13}\text{C}(\alpha, n)^{16}\text{O}$. *H. W. Drotleff, A. Denker, H. Klee, M. Soiné, G. Wolf, J. W. Hammer, U. Greife, C. Rolfs, & H. P. Trautvetter*. 414, 735, 180-D3 (1993)
- DUNCAN, DOUGLAS K. Evidence for a Dispersion in the Lithium Abundances of Extreme Halo Stars. *Constantine P. Deliyannis, M. H. Pinsonneault, & Douglas K. Duncan*. 414, 740, 180-D10 (1993)
- DURIC, NEBOJSA. 3C 317: An Amorphous Radio Source in the Cooling Flow Cluster Abell 2052. *Jun-Hui Zhao, Dean M. Sumi, J. O. Burns, & Nebojsa Duric*. 416, 51, 201-F7 (1993)
- DUROUCHOUX, P. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- DUROUCHOUX, PH. How Many Positron Sources in the Galactic Center Region? *P. Wallyn & Ph. Durouchoux*. 414, 178, 172-C2 (1993)
- ELIAS, N. M., II. The Asymmetric Envelope of γ Cassiopeiae Observed with the Mk III Optical Interferometer. *A. Quirrenbach, C. A. Hummel, D. F. Buscher, J. T. Armstrong, D. Mozurkewich, & N. M. Elias II*. 416, L25, 207-D7 (1993)
- ELITZUR, MOSHE. Polarization of Astronomical Maser Radiation. II. Polarization Modes and Unsaturated Growth. *Moshe Elitzur*. 416, 256, 204-C7 (1993)
- ELSTON, RICHARD. Optical Lines in High-Redshift Quasi-stellar Objects: Balmer Lines, [O III], and Fe II. *Gary J. Hill, Keith L. Thompson, & Richard Elston*. 414, L1, 175-C1 (1993)
- ELVIS, MARTIN. The ROSAT Spectrum of 3C 351: A Warm Absorber in an X-Ray-"quiet" Quasar? *Fabrizio Fiore, Martin Elvis, Smita Mathur, Belinda J. Wilkes, & Jonathan C. McDowell*. 415, 129, 186-F1 (1993)
- ERIGUCHI, YOSHIHARU. Structure and Circulation of Self-gravitating Toroids. *Yoshiharu Eriguchi & Ewald Müller*. 416, 666, 211-F6 (1993)
- ERWIN, PETER. Strong [Fe II] Emission from NGC 1275. *Richard J. Rudy, Ross D. Cohen, George S. Rossano, Peter Erwin, R. C. Puettner, Matthew A. Greenhouse, & Charles E. Woodward*. 414, 527, 177-F13 (1993)
- ESCALONA T., ORLANDO B. Propagation of Hydrodynamic Waves in Optically Thin Plasmas. *Miguel H. Ibáñez S., & Orlando B. Escalona T.* 415, 335, 189-B7 (1993)
- EVENSON, KENNETH M. Rotational Frequencies of Transition Metal Hydrides for Astrophysical Searches in the Far-Infrared. *John M. Brown, Stuart P. Beaton, & Kenneth M. Evenson*. 414, L125, 186-C6 (1993)
- EWELL, M. W., JR. The Center-to-Limb Brightness Variation of the Sun at $\lambda = 850$ Microns. *T. S. Bastian, M. W. Ewell, Jr., & H. Zirin*. 415, 364, 189-D13 (1993)
- FABIAN, A. C. OSSE Observations of the Bright Seyfert 1 Galaxy IC 4329A. *A. C. Fabian, K. Nandra, A. Celotti, M. J. Rees, J. E. Grove, & W. N. Johnson*. 416, L57, 216-C1 (1993)
- FALL, S. MICHAEL. Lyman-Alpha Emission from Galaxies. *Stéphane Charlot & S. Michael Fall*. 415, 580, 195-A13 (1993)
- FAN, J. H. Radio-selected BL Lacertae Objects and Some Correlations. *J. H. Fan, G. Z. Xie, J. J. Li, J. Liu, S. L. Wen, R. R. Huang, Z. M. Tang, & Y. J. Wang*. 415, 113, 186-D12 (1993)
- FANG, C. Semiempirical Flare Models with Chromospheric Condensation. *W. Q. Gan, E. Rieger, & C. Fang*. 416, 886, 214-D10 (1993)
- FANG, D. Statistics of QSO Broad Emission-Line Profiles. I. The C IV $\lambda 1549$ Line and the $\lambda 1400$ Feature. *Beverly J. Willis, M. S. Brotherton, D. Fang, Charles C. Steidel, & Wallace L. W. Sargent*. 415, 563, 194-G8 (1993)
- FARDAL, MARK A. The Two-Point Correlation Function of Randomly Distributed Lyman-Alpha Clouds. *Mark A. Fardal & J. Michael Shull*. 415, 524, 194-D1 (1993)
- FASANO, G. The Shapes of Galaxy Groups. *G. Fasano, A. Pisani, R. Vio, & M. Girardi*. 416, 546, 210-B8 (1993)
- FATUZZO, MARCO. Focusing of Alfvénic Wave Power in the Context of Gamma-Ray Burst Emissivity. *Marco Fatuzzo & Fulvio Melia*. 414, L89, 185-F7 (1993)
- FEDERMAN, S. R. Ultraviolet Transitions of Low Condensation Temperature Heavy Elements and New Data for Interstellar Arsenic, Selenium, Tellurium, and Lead. *Jason A. Cardelli, S. R. Federman, David L. Lambert, & C. E. Theodosiou*. 416, L41, 207-F5 (1993)
- FEFFER, P. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- FEIGELSON, ERIC D. ROSAT X-Ray Study of the Chamaeleon I Dark Cloud. I. The Stellar Population. *Eric D. Feigelson, Sophie Casanova, Thierry Montmerle, & Jean Guibert*. 416, 623, 211-B8 (1993)
- FELDMAN, P. D. Detection of [O II] $\lambda 2471$ from the Io Plasma Torus. *M. A. McGrath, P. D. Feldman, D. F. Strobel, H. W. Moos, & G. E. Ballester*. 415, L55, 192-D7 (1993)
- FELDMAN, PAUL D. The Spectrum of EZ Canis Majoris (HD 50896) to the Lyman Limit with the Hopkins Ultraviolet Telescope. *Stephan R. McCandliss, Richard H. Buss, Jr., William P. Blair,*

- Charles W. Bowers, Arthur F. Davidsen, Paul D. Feldman, & Jeffrey W. Kruk. 416, 372, 205-F3 (1993)
- FELDMAN, U. Elemental Abundances in the Upper Solar Atmosphere of Quiet and Coronal Hole Regions ($T_e \approx 4.3 \times 10^5$ K). *U. Feldman & K. G. Widing*. 414, 381, 174-F9 (1993)
- Nonphotospheric Abundances in a Solar Active Region. *K. G. Widing & U. Feldman*. 416, 392, 206-A1 (1993)
- FENG, Z. Y. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- FERNIE, J. D. Goodbye to Polaris the Cepheid. *J. D. Fernie, Karl W. Kamper, & S. Seager*. 416, 820, 213-F1 (1993)
- FERRARI, A. Radiative Instability in Synchrotron-emitting Plasmas. *P. Rossi, G. Bodo, S. Massaglia, & A. Ferrari*. 414, 112, 171-D7 (1993)
- FESEN, ROBERT A. Faint Object Spectrograph Spectra of the Broad Fe II Absorption Lines in the Remnant of SN 1006. *Chi-Chao Wu, D. Michael Crenshaw, Robert A. Fesen, Andrew J. S. Hamilton, & Craig L. Sarazin*. 416, 247, 204-B7 (1993)
- FICH, MICHEL. Millimeter and Submillimeter Continuum Emission from Early-Type Galaxies. *Michel Fich & Paul Hodge*. 415, 75, 186-A1 (1993)
- FICHEL, C. E. See NOLAN, P. L., et al. Observation of High-Energy Gamma Rays from the Quasi-stellar Object CTA 102.
- See THOMPSON, D. J., et al. EGRET Observations of Active Galactic Nuclei: 0836+710, 0454-234, 0804+499, 0906+430, 1510-089, and 2356+196.
- Diffuse Gamma-Ray Emission in the Galactic Plane from Cosmic-Ray, Matter, and Photon Interactions. *D. L. Bertsch, T. M. Dame, C. E. Fichtel, S. D. Hunter, P. Sreekumar, J. G. Stacy, & P. Thaddeus*. 416, 587, 210-F6 (1993)
- See LIN, Y. C., et al. EGRET Limits on High-Energy Gamma-Ray Emission from X-Ray- and Low-Energy Gamma-Ray-selected Seyfert Galaxies.
- FIEDLER, ROBERT A. Ambipolar Diffusion and Star Formation: Formation and Contraction of Axisymmetric Cloud Cores. II. Results. *Robert A. Fiedler & Telemachos Ch. Mouschovias*. 415, 680, 196-C7 (1993)
- FIELDS, BRIAN D. Population II ^6Li as a Probe of Nucleosynthesis and Stellar Structure and Evolution. *Gary Steigman, Brian D. Fields, Keith A. Olive, David N. Schramm, & Terry P. Walker*. 415, L35, 192-B1 (1993)
- FILIPPENKO, A. V. Interpretation of the Early Spectra of SN 1993J in M81. *E. Baron, P. H. Hauschildt, D. Branch, R. M. Wagner, S. J. Austin, A. V. Filippenko, & T. Matheson*. 416, L21, 207-D2 (1993)
- FILIPPENKO, ALEXEI V. The "Type IIb" Supernova 1993J in M81: A Close Relative of Type Ib Supernovae. *Alexei V. Filippenko, Thomas Matheson, & Luis C. Ho*. 415, L103, 200-A8 (1993)
- FINN, JOHN M. Long-Term Containment of Energetic Particles in Coronal Loops. *Yun-Tung Lau, Theodore G. Northrop, & John M. Finn*. 414, 908, 182-E10 (1993)
- FIORÉ, FABRIZIO. The ROSAT Spectrum of 3C 351: A Warm Absorber in an X-Ray-"quiet" Quasar? *Fabrizio Fiore, Martin Elvis, Smita Mathur, Belinda J. Wilkes, & Jonathan C. McDowell*. 415, 129, 186-F1 (1993)
- FISHER, R. R. Large-Scale Coronal Temperature and Density Distributions, 1984-1992. *M. Guhathakurta, R. R. Fisher, & R. C. Altrock*. 414, L145, 186-E7 (1993)
- FISHMAN, G. J. See NEMIROFF, R. J., et al. Searching Gamma-Ray Bursts for Gravitational Lensing Echoes: Implications for Compact Dark Matter.
- FLEMING, THOMAS A. A Tight Correlation between Radio and X-Ray Luminosities of M Dwarfs. *Manuel Güdel, Jürgen H. M. M. Schmitt, Jay A. Bookbinder, & Thomas A. Fleming*. 415, 236, 188-A1 (1993)
- Detection of the First Coronal X-Ray Source about a White Dwarf. *Thomas A. Fleming, Klaus Werner, & Martin A. Barstow*. 416, L79, 216-E6 (1993)
- FLUDRA, A. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKOH.
- FONTANA, ADRIANO. The Lyman-Alpha Forest of PKS 2126-158 at High Resolution. *Emanuele Giallongo, Stefano Cristiani, Adriano Fontana, & Dario Trévese*. 416, 137, 202-F10 (1993)
- FORBES, DUNCAN A. Radio and Near-Infrared [Fe II] Emission from Active Galaxies. *Duncan A. Forbes & Martin J. Ward*. 416, 150, 202-G12 (1993)
- FORD, HOLLAND C. The Planetary Nebula System and Dynamics of NGC 5128. I. Planetary Nebulae as Standard Candles. *Xiaohui Hui, Holland C. Ford, Robin Ciardullo, & George H. Jacoby*. 414, 463, 177-A1 (1993)
- FOSTER, PRUDENCE N. Gravitational Collapse of an Isothermal Sphere. *Prudence N. Foster & Roger A. Chevalier*. 416, 303, 204-G8 (1993)
- FRANSSON, CLAES. See KIRSHNER, ROBERT P., et al. SN 1992A: Ultraviolet and Optical Studies Based on HST, IUE, and CTIO Observations.
- FRUSCIONE, A. Observations of PKS 2155-304 with the Extreme Ultraviolet Explorer. *H. L. Marshall, T. E. Carone, & A. Fruscione*. 414, L53, 185-B7 (1993)
- FUJIMOTO, MITSUAKI. Formation of Globular Clusters and Galactic Environments. *Yasuki Kumai, Yuichi Hashi, & Mitsuaki Fujimoto*. 416, 576, 210-E5 (1993)
- FUKUI, Y. An IRAS Sample from Co-added Images of L1641. *H. Chen, A. T. Tokunaga, & Y. Fukui*. 416, 235, 204-A4 (1993)
- FULLER, G. M. The QCD Phase Transition and Supernova Core Collapse. *N. A. Gentile, M. B. Aufderheide, G. J. Mathews, F. D. Swesty, & G. M. Fuller*. 414, 701, 180-A3 (1993)
- FURTON, DOUGLAS G. Activation of Extended Red Emission Photoluminescence in Carbon Solids by Exposure to Atomic Hydrogen and UV Radiation. *Douglas G. Furton & Adolf N. Witt*. 415, L51, 192-D1 (1993)
- FUSHIKI, I. Thomas-Fermi Calculations of Atoms and Matter in Magnetic Neutron Stars: Effects of Higher Landau Bands. *Ö. E. Rögnvaldsson, I. Fushiki, E. H. Gudmundsson, C. J. Pethick, & J. Yngvason*. 416, 276, 204-E3 (1993)
- GABUZDA, D. C. Milliarsecond Polarization Structure of 24 Objects from the Pearson-Readhead Sample of Bright Extragalactic Radio Sources. I. The Images. *T. V. Cawthorne, J. F. C. Wardle, D. H. Roberts, D. C. Gabuzda, & L. F. Brown*. 416, 496, 209-D11 (1993)
- Milliarsecond Polarization Structure of 24 Objects from the Pearson-Readhead Sample of Bright Extragalactic Radio Sources. II. Discussion. *T. V. Cawthorne, J. F. C. Wardle, D. H. Roberts, & D. C. Gabuzda*. 416, 519, 209-G5 (1993)
- GAIZAUSKAS, VICTOR. Quasi-periodic Particle Injection into Coronal Loops. *Markus J. Aschwanden, Arnold O. Benz, Brian R. Dennis, & Victor Gaizauskas*. 416, 857, 214-B5 (1993)
- GAN, W. Q. Semiempirical Flare Models with Chromospheric Condensation. *W. Q. Gan, E. Rieger, & C. Fang*. 416, 886, 214-D10 (1993)
- GANGADHARA, R. T. Polarization Changes of Radiation through Stimulated Raman Scattering. *R. T. Gangadhara & V. Krishan*. 415, 505, 194-B6 (1993)
- GANON, GALIT. Constrained Realizations of Gaussian Fields: Reconstruction of the Large-Scale Structure. *Galit Ganan & Yehuda Hoffman*. 415, L5, 191-F1 (1993)
- GARCIA-SEGURA, GUILLERMO. Hidden Supernova Remnants in the Large Magellanic Cloud H II Complex N44. *You-Hua Chu, Mordecai-Mark Mac Low, Guillermo Garcia-Segura, Bart Wakker, & Robert C. Kennicutt, Jr.* 414, 213, 172-F2 (1993)
- GARDNER, J. P. Galaxy Number Counts from $K = 10$ to $K = 23$. *J. P. Gardner, L. L. Cowie, & R. J. Wainscoat*. 415, L9, 191-F7 (1993)
- GAYLEY, K. G. Partially Coherent Scattering in Stellar Chromospheres. IV. Analytic Wing Approximations. *K. G. Gayley*. 415, 811, 198-A1 (1993)
- GENTILE, N. A. The QCD Phase Transition and Supernova Core Collapse. *N. A. Gentile, M. B. Aufderheide, G. J. Mathews, F. D. Swesty, & G. M. Fuller*. 414, 701, 180-A3 (1993)
- GHISELLINI, G. Unified Model for X-Ray- and Radio-selected BL Lacertae Objects. *A. Celotti, L. Maraschi, G. Ghisellini, A. Caccianiga, & T. Maccacaro*. 416, 118, 202-D13 (1993)

- GIALONGO, EMANUELE. The Lyman-Alpha Forest of PKS 2126-158 at High Resolution. *Emanuele Gialongo, Stefano Cristiani, Adriano Fontana, & Dario Trévese*. 416, 137, 202-F10 (1993)
- GIOIA, I. M. The Complex, Gravitationally Lensed Arc System in the X-Ray-selected Cluster of Galaxies MS 0440+0204. *G. A. Luppino, I. M. Gioia, J. Annis, O. Le Fèvre, & F. Hammer*. 416, 444, 208-G8 (1993)
- GIRARDI, M. The Shapes of Galaxy Groups. *G. Fasano, A. Pisani, R. Vio, & M. Girardi*. 416, 546, 210-B8 (1993)
- GOLDSTEIN, M. L. Evaluation of Emission Mechanisms at ω_p . Using *Ulysses* Observations of Type III Bursts. *G. Thejappa, D. Lengyel-Frey, R. G. Stone, & M. L. Goldstein*. 416, 831, 213-G1 (1993)
- GÓMEZ, JOSÉ F. Upper Limits to the Detection of Ammonia from Protoplanetary Disks around HL Tauri and L1551-IRS 5. *José F. Gómez, José M. Torrelles, Paul T. P. Ho, Luis F. Rodríguez, & Jorge Cantó*. 414, 333, 174-B6 (1993)
- GÓMEZ, MERCEDES. The Embedded Young Stars in the Taurus-Auriga Molecular Cloud. II. Models for Scattered Light Images. *Scott J. Kenyon, Barbara A. Whitney, Mercedes Gomez, & Lee Hartmann*. 414, 773, 180-G9 (1993)
- GÓMEZ, YOLANDA. Detection of the Angular Expansion Rate and Determination of the Distance of the Planetary Nebula NGC 6302. *Yolanda Gómez, Luis F. Rodríguez, & James M. Moran*. 416, 620, 211-B1 (1993)
- GONÇALVES, D. R. Formation of Quasar Clouds by Thermal Instability in the Presence of Alfvén Wave Heating. *D. R. Gonçalves, V. Jatenco-Pereira, & R. Opher*. 414, 57, 170-F12 (1993)
- GOODMAN, JEREMY. On the Exponential Instability of *N*-Body Systems. *Jeremy Goodman, Douglas C. Heggie, & Piet Hut*. 415, 715, 196-F11 (1993)
- GOSHY, JOHN. A Theory of Supernova Explosions. *Adam Burrows & John Goshy*. 416, L75, 216-E1 (1993)
- GOUGH, DOUGLAS. Are the 1986-1988 Changes in Solar Free-Oscillation Frequency Splitting Significant? *Douglas Gough & Philip B. Stark*. 415, 376, 189-E13 (1993)
- GOULD, ANDREW. Deflection of Light by the Earth. *Andrew Gould*. 414, L37, 175-F11 (1993)
- GRADY, C. A. Detection of Accreting Gas toward HD 45677: A Newly Recognized, Herbig Be Proto-Planetary System. *C. A. Grady, K. S. Bjorkman, D. Shepherd, R. E. Schulte-Ladbeck, M. R. Pérez, D. de Winter, & P. S. Thé*. 415, L39, 192-B6 (1993)
- GREENBERG, J. MAYO. What Is New about the New Comet Yanaka (1988r)? *J. Mayo Greenberg, P. D. Singh, & A. A. de Almeida*. 414, L45, 175-G7 (1993)
- GREENHOUSE, MATTHEW A. Strong [Fe II] Emission from NGC 1275. *Richard J. Rudy, Ross D. Cohen, George S. Rossano, Peter Erwin, R. C. Puetter, Matthew A. Greenhouse, & Charles E. Woodward*. 414, 527, 177-F13 (1993)
- GREIFE, U. See DROTLEFF, H. W., et al. Reaction Rates of the *s*-Process Neutron Sources $^{22}\text{Ne}(\alpha, n)^{25}\text{Mg}$ and $^{13}\text{C}(\alpha, n)^{16}\text{O}$.
- GRONWALL, CARYL. Counter-Evolution of Faint Field Galaxies. *David C. Koo, Caryl Gronwall, & Gustavo Bruzual A.* 415, L21, 191-G10 (1993)
- GROVE, J. E. *SMM* Observations of Gamma-Ray Transients. I. A Search for Variable Emission at MeV Energies from Five Galactic and Extragalactic Sources. *M. J. Harris, G. H. Share, M. D. Leising, & J. E. Grove*. 416, 601, 210-G8 (1993)
- OSSE Observations of the Bright Seyfert 1 Galaxy IC 4329A. *A. C. Fabian, K. Nandra, A. Celotti, M. J. Rees, J. E. Grove, & W. N. Johnson*. 416, L57, 216-C1 (1993)
- GRUBER, D. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- GRUENWALD, RUTH. The Origin of Mg II Absorption-Line Systems of Quasi-stellar Objects. *Ruth Gruenwald & Sueli M. Viegas*. 415, 534, 194-E1 (1993)
- GUDEMUNDSSON, E. H. Thomas-Fermi Calculations of Atoms and Matter in Magnetic Neutron Stars: Effects of Higher Landau Bands. *Ö. E. Rögnvaldsson, I. Fushiki, E. H. Gudmundsson, C. J. Pethick, & J. Yngvason*. 416, 276, 204-E3 (1993)
- GÜDEL, MANUEL. A Tight Correlation between Radio and X-Ray Luminosities of M Dwarfs. *Manuel Güdel, Jürgen H. M. M. Schmitt, Jay A. Bookbinder, & Thomas A. Fleming*. 415, 236, 188-A1 (1993)
- Electromagnetic Radiation from a Strong DC Electric Field. *Manuel Güdel & Donat G. Wentzel*. 415, 750, 197-B10 (1993)
- GUHATHAKURTA, M. Large-Scale Coronal Temperature and Density Distributions, 1984-1992. *M. Guhathakurta, R. R. Fisher, & R. C. Alcock*. 414, L145, 186-E7 (1993)
- GUIBERT, JEAN. *ROSAT* X-Ray Study of the Chamaeleon I Dark Cloud. I. The Stellar Population. *Eric D. Feigelson, Sophie Casanova, Thierry Montmerle, & Jean Guibert*. 416, 623, 211-B8 (1993)
- HALPERN, J. P. Soft X-Ray Properties of the Geminga Pulsar. *J. P. Halpern & M. Ruderman*. 415, 286, 188-E8 (1993)
- HAMANN, FRED. On the Geometry, Covering Factor, and Scattering-Emission Properties of QSO Broad Absorption-Line Regions. *Fred Hamann, Kirk T. Korista, & Simon L. Morris*. 415, 541, 194-E11 (1993)
- HAMILTON, ANDREW J. S. Faint Object Spectrograph Spectra of the Broad Fe II Absorption Lines in the Remnant of SN 1006. *Chi-Chao Wu, D. Michael Crenshaw, Robert A. Fesen, Andrew J. S. Hamilton, & Craig L. Sarazin*. 416, 247, 204-B7 (1993)
- HAMMER, F. The Complex, Gravitationally Lensed Arc System in the X-Ray-selected Cluster of Galaxies MS 0440+0204. *G. A. Luppino, I. M. Gioia, J. Annis, O. Le Fèvre, & F. Hammer*. 416, 444, 208-G8 (1993)
- HAMMER, J. W. See DROTLEFF, H. W., et al. Reaction Rates of the *s*-Process Neutron Sources $^{22}\text{Ne}(\alpha, n)^{25}\text{Mg}$ and $^{13}\text{C}(\alpha, n)^{16}\text{O}$.
- HAMUY, MARIO. See KIRSHNER, ROBERT P., et al. SN 1992A: Ultraviolet and Optical Studies Based on *HST*, *IUE*, and CTIO Observations.
- HANAMI, HITOSHI. On Cosmological Constraints from Statistics of X-Ray Clusters. *Hitoshi Hanami*. 415, 42, 185-E6 (1993)
- HANLON, PATRICIA C. Low-Mass Star Formation in Cooling Flow Galaxies. *James M. Schombert, Mary Barsony, & Patricia C. Hanlon*. 416, L61, 216-C7 (1993)
- HARA, HIROHISA. Temperature and Density Structure of the 1991 November 2 Flare Observed by the *YOHKOH* Soft X-Ray Telescope and Hard X-Ray Telescope. *James M. McTiernan, Sharad R. Kane, Jon M. Loran, James R. Lemen, Loren W. Acton, Hirohisa Hara, Saku Tsuneta, & Takeo Kosugi*. 416, L91, 216-F6 (1993)
- HARA, TETSUYA. Effects of Long Cosmic Strings on the Anisotropies of the Cosmic Background Radiation. *Tetsuya Hara, Petri Mähönen, & Shigeru Miyoshi*. 414, 421, 176-D3 (1993)
- Large-Scale Peculiar Velocity Field Due to Infinitely Long Cosmic Strings. *Tetsuya Hara, Petri Mähönen, & Shigeru Miyoshi*. 415, 445, 193-D1 (1993)
- HARKNESS, ROBERT P. See KIRSHNER, ROBERT P., et al. SN 1992A: Ultraviolet and Optical Studies Based on *HST*, *IUE*, and CTIO Observations.
- HARDEN, F. R., JR. X-Ray Emission at the Low-Mass End: Results from an Extensive *Einstein* Observatory Survey. *M. Barbera, G. Micela, S. Sciortino, F. R. Hardin, Jr., & R. Rosner*. 414, 846, 181-F10 (1993)
- ROSAT* X-Ray Detection of ϵ Tauri: Revisiting the Coronal and Transition Region Emission of the Hyades Giants. *A. Collura, A. Maggio, G. Micela, S. Sciortino, F. R. Hardin, Jr., & R. Rosner*. 416, 204, 203-E8 (1993)
- HARRINGTON, J. PATRICK. *HST* Imaging of Hydrogen-poor Ejecta in Abell 30 and Abell 78: Wind-blown Cometary Structures. *Kazimierz J. Borkowski, J. Patrick Harrington, Zlatan Tsvetanov, & Robin E. S. Clegg*. 415, L47, 192-C4 (1993)
- HARRIS, M. J. *SMM* Observations of Gamma-Ray Transients. I. A Search for Variable Emission at MeV Energies from Five Galactic and Extragalactic Sources. *M. J. Harris, G. H. Share, M. D. Leising, & J. E. Grove*. 416, 601, 210-G8 (1993)
- HARTIGAN, P. *Hubble Space Telescope* Images of the Subarcsecond Jet in DG Tauri. *J. Kepner, P. Hartigan, C. Yang, & S. Strom*. 415, L119, 200-C8 (1993)
- HARTIGAN, PATRICK. Observations of Entrainment and Time Variability in the HH 47 Jet. *Patrick Hartigan, Jon A. Morse, Steve Heathcote, & Gerald Cecil*. 414, L121, 186-B11 (1993)

- HARTMAN, R. C. See NOLAN, P. L., et al. Observation of High-Energy Gamma Rays from the Quasi-stellar Object CTA 102.
- See THOMPSON, D. J., et al. EGRET Observations of Active Galactic Nuclei: 0836+710, 0454-234, 0804+499, 0906+430, 1510-089, and 2356+196.
- See LIN, Y. C., et al. EGRET Limits on High-Energy Gamma-Ray Emission from X-Ray- and Low-Energy Gamma-Ray-selected Seyfert Galaxies.
- HARTMANN, DIETER H. On ^{26}Al and Other Short-lived Interstellar Radioactivity. *Donald D. Clayton, Dieter H. Hartmann, & Mark D. Leising.* 415, L25, 192-A1 (1993)
- HARTMANN, LEE. The Embedded Young Stars in the Taurus-Auriga Molecular Cloud. I. Models for Spectral Energy Distributions. *Scott J. Kenyon, Nuria Calvet, & Lee Hartmann.* 414, 676, 179-F1 (1993)
- The Embedded Young Stars in the Taurus-Auriga Molecular Cloud. II. Models for Scattered Light Images. *Scott J. Kenyon, Barbara A. Whitney, Mercedes Gomez, & Lee Hartmann.* 414, 773, 180-G9 (1993)
- Boundary Layers in Pre-Main-Sequence Accretion Disks. *Robert Popham, Ramesh Narayan, Lee Hartmann, & Scott Kenyon.* 415, L127, 200-D9 (1993)
- HASCHICK, AUBREY D. Formaldehyde Emission in Galaxies. *Willem A. Baan, Aubrey D. Haschick, & Robert Uglesich.* 415, 140, 186-G1 (1993)
- HASHI, YUICHI. Formation of Globular Clusters and Galactic Environments. *Yasuki Kumai, Yuichi Hashi, & Mitsuaki Fujimoto.* 416, 576, 210-E5 (1993)
- HASHIMOTO, MASAOKI. Type II Supernovae from 8-10 M_{\odot} Asymptotic Giant Branch Stars. *Masaaki Hashimoto, Kohichi Iwamoto, & Ken'ichi Nomoto.* 414, L105, 186-A1 (1993)
- HAUSCHILDT, P. H. Interpretation of the Early Spectra of SN 1993J in M81. *E. Baron, P. H. Hauschildt, D. Branch, R. M. Wagner, S. J. Austin, A. V. Filippenko, & T. Matheson.* 416, L21, 207-D2 (1993)
- HAYNES, MARTHA P. The Rotation Curves of Galaxies at Intermediate Redshift. *Nicole P. Vogt, Terry Herter, Martha P. Haynes, & Stéphane Courteau.* 415, L95, 199-G11 (1993)
- HEATHCOTE, STEVE. Observations of Entrainment and Time Variability in the HH 47 Jet. *Patrick Hartigan, Jon A. Morse, Steve Heathcote, & Gerald Cecil.* 414, L121, 186-B11 (1993)
- HEGGIE, DOUGLAS C. On the Exponential Instability of N -Body Systems. *Jeremy Goodman, Douglas C. Hoggie, & Piet Hut.* 415, 715, 196-F11 (1993)
- HELOU, G. A Physical Model of the Infrared-to-Radio Correlation in Galaxies. *G. Helou & M. D. Bica.* 415, 93, 186-B9 (1993)
- HENRIKSEN, MARK J. X-Ray Spectral Observations of Clusters of Galaxies Undergoing Merger Events. *Mark J. Henriksen.* 414, L5, 175-C6 (1993)
- HERNQUIST, LARS. Bending Instabilities in Galaxy Merger Remnants. *Lars Hernquist, Jeremy S. Heyl, & David N. Spergel.* 416, L9, 207-B13 (1993)
- Structure of Merger Remnants. III. Phase-Space Constraints. *Lars Hernquist, David N. Spergel, & Jeremy S. Heyl.* 416, 415, 208-E4 (1993)
- HERTER, TERRY. The Rotation Curves of Galaxies at Intermediate Redshift. *Nicole P. Vogt, Terry Herter, Martha P. Haynes, & Stéphane Courteau.* 415, L95, 199-G11 (1993)
- HEYL, JEREMY S. Bending Instabilities in Galaxy Merger Remnants. *Lars Hernquist, Jeremy S. Heyl, & David N. Spergel.* 416, L9, 207-B13 (1993)
- Structure of Merger Remnants. III. Phase-Space Constraints. *Lars Hernquist, David N. Spergel, & Jeremy S. Heyl.* 416, 415, 208-E4 (1993)
- HIBINO, K. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- HIEI, E. See DOSCHKE, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKOH.
- HILL, GARY J. Optical Lines in High-Redshift Quasi-stellar Objects: Balmer Lines, [O III], and Fe II. *Gary J. Hill, Keith L. Thompson, & Richard Elston.* 414, L1, 175-C1 (1993)
- HILL, J. M. The Dynamics of the Galaxy Cluster Abell 2634. *J. Pinkney, G. Rhee, J. O. Burns, J. M. Hill, W. Oegerle, D. Batuski, & P. Hintzen.* 416, 36, 201-E2 (1993)
- HILL, JESSE K. Ultraviolet Photometry of OB Associations in M31. *Jesse K. Hill, Joan E. Isensee, Ralph C. Bohlin, Robert W. O'Connell, Morton S. Roberts, Andrew M. Smith, & Theodore P. Stecher.* 414, L9, 175-C11 (1993)
- HINES, DEAN C. Spectropolarimetry of SN 1993J in NGC 3031. *Susan R. Trammell, Dean C. Hines, & J. Craig Wheeler.* 414, L21, 175-E2 (1993)
- The Highly Polarized Hidden Quasar IRAS 09104+4109: A Double-lobed Radio Source in a Rich Cluster. *Dean C. Hines & Beverley J. Wills.* 415, 82, 186-A10 (1993)
- HINSHAW, G. Noncosmological Signal Contributions to the COBE DMR Anisotropy Maps. *C. L. Bennett, G. Hinshaw, A. Banday, A. Kogut, E. L. Wright, K. Loewenstein, & E. S. Cheng.* 414, L76, 185-D13 (1993)
- HINTZEN, P. The Dynamics of the Galaxy Cluster Abell 2634. *J. Pinkney, G. Rhee, J. O. Burns, J. M. Hill, W. Oegerle, D. Batuski, & P. Hintzen.* 416, 36, 201-E2 (1993)
- HIRANO, NAOMI. High Spatial Resolution Observations of CO in CRL 618. *Katsunori M. Shibata, Shuji Deguchi, Naomi Hirano, Osamu Kameya, & Shin'ichi Tamura.* 415, 708, 196-F1 (1993)
- HIRAYAMA, T. See DOSCHKE, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKOH.
- HO, LUIS C. The "Type IIb" Supernova 1993J in M81: A Close Relative of Type Ib Supernovae. *Alexei V. Filippenko, Thomas Matheson, & Luis C. Ho.* 415, L103, 200-A8 (1993)
- HO, PAUL T. P. Upper Limits to the Detection of Ammonia from Protoplanetary Disks around HL Tauri and L1551-IRS 5. *José F. Gómez, José M. Torrelles, Paul T. P. Ho, Luis F. Rodríguez, & Jorge Cantó.* 414, 333, 174-B6 (1993)
- HOBBS, L. M. Lithium in the Hyades. I. New Observations. *J. A. Thorburn, L. M. Hobbs, Constantine P. Deliyannis, & M. H. Pinsonneault.* 415, 150, 186-G12 (1993)
- HODGE, PAUL. Millimeter and Submillimeter Continuum Emission from Early-Type Galaxies. *Michel Fich & Paul Hodge.* 415, 75, 186-A1 (1993)
- HOFFMAN, YEHUDA. Second-Order Perturbation Theory in an Expanding Universe: Spherical Harmonics Expansion. *Saleem Zaroubi & Yehuda Hoffman.* 414, 20, 170-C8 (1993)
- Constrained Realizations of Gaussian Fields: Reconstruction of the Large-Scale Structure. *Galit Ganan & Yehuda Hoffman.* 415, L5, 191-F1 (1993)
- Gravitational Collapse in an Expanding Universe: Asymptotic Self-similar Solutions. *Saleem Zaroubi & Yehuda Hoffman.* 416, 410, 208-D12 (1993)
- HOGAN, CRAIG J. Prerecombination Cloud Collapse and Baryonic Dark Matter. *Craig J. Hogan.* 415, L63, 199-D1 (1993)
- HOLBERG, J. B. Two New Extremely Iron-rich Hot DA White Dwarfs and the Nature of the EUV Opacity. *J. B. Holberg, M. A. Barstow, D. A. H. Buckley, A. Chen, S. Dreizler, M. C. Marsh, D. O'Donoghue, E. M. Sion, R. W. Tweedy, G. Vauclair, & K. Werner.* 416, 806, 213-D13 (1993)
- HOLTZMAN, JON. Structure Formation with Cold plus Hot Dark Matter. *Anatoly Khypin, Jon Holtzman, Joel Primack, & Enikő Regös.* 416, 1, 201-B1 (1993)
- HORACK, J. M. See NEMIROFF, R. J., et al. Searching Gamma-Ray Bursts for Gravitational Lensing Echoes: Implications for Compact Dark Matter.
- HOROWITZ, PAUL. Five Years of Project META: An All-Sky Narrow-Band Radio Search for Extraterrestrial Signals. *Paul Horowitz & Carl Sagan.* 415, 218, 187-F8 (1993)
- HOSSAIN, MURSHED. Simulation of Compressible Convection: A Comparative Study of Boundary Conditions. *Murshed Hossain & D. J. Mullan.* 416, 733, 212-E1 (1993)
- HOTTA, N. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- HUA, XIN-MIN. Compton Backscattered Annihilation Radiation and the Mass of Nova Muscae. *Xin-Min Hua & Richard E. Lingens.* 416, L17, 207-C11 (1993)

- HUANG, Q. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- HUANG, R. R. Radio-selected BL Lacertae Objects and Some Correlations. *J. H. Fan, G. Z. Xie, J. J. Li, J. Liu, S. L. Wen, R. R. Huang, Z. M. Tang, & Y. J. Wang.* 415, 113, 186-D12 (1993)
- HUDSON, H. S. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKOH.
- HUGHES, JOHN P. High-Resolution X-Ray Spectroscopy of the Supernova Remnant N132D. *Una Hwang, John P. Hughes, Claude R. Canizares, & Thomas H. Markert.* 414, 219, 172-F11 (1993)
- HUI, XIAOHUI. The Planetary Nebula System and Dynamics of NGC 5128. I. Planetary Nebulae as Standard Candles. *Xiaohui Hui, Holland C. Ford, Robin Ciardullo, & George H. Jacoby.* 414, 463, 177-A1 (1993)
- HUMMEL, C. A. The Asymmetric Envelope of γ Cassiopeiae Observed with the Mk III Optical Interferometer. *A. Quirrenbach, C. A. Hummel, D. F. Buscher, J. T. Armstrong, D. Mozurkewich, & N. M. Elias II.* 416, L25, 207-D7 (1993)
- HUNTER, DEIDRE A. See KIRSHNER, ROBERT P., et al. SN 1992A: Ultraviolet and Optical Studies Based on HST, IUE, and CTIO Observations.
- HUNTER, S. D. See NOLAN, P. L., et al. Observation of High-Energy Gamma Rays from the Quasi-stellar Object CTA 102.
- See THOMPSON, D. J., et al. EGRET Observations of Active Galactic Nuclei: 0836+710, 0454-234, 0804+499, 0906+430, 1510-089, and 2356+196.
- Diffuse Gamma-Ray Emission in the Galactic Plane from Cosmic-Ray, Matter, and Photon Interactions. *D. L. Bertsch, T. M. Dame, C. E. Fichtel, S. D. Hunter, P. Sreekumar, J. G. Stacy, & P. Thaddeus.* 416, 587, 210-F6 (1993)
- See LIN, Y. C., et al. EGRET Limits on High-Energy Gamma-Ray Emission from X-Ray- and Low-Energy Gamma-Ray-selected Seyfert Galaxies.
- HUNTER, TODD. Discovery of Interstellar Water Lines at 437, 439, and 471 GHz: Strong Case for Water Maser Formation behind C-Type Shocks. *Gary J. Melnick, Karl M. Menten, Thomas G. Phillips, & Todd Hunter.* 416, L37, 207-E13 (1993)
- HUO, A. X. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- HURLEY, K. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- HURT, TODD. Hubble Space Telescope Ultraviolet Spectroscopy of the Highly Polarized but Quiescent Quasar O1 287. *Robert Antonucci, Anne L. Kinney, & Todd Hurt.* 414, 506, 177-E1 (1993)
- HUT, PIET. On the Exponential Instability of N-Body Systems. *Jeremy Goodman, Douglas C. Heggie, & Piet Hut.* 415, 715, 196-F11 (1993)
- HUTCHINGS, JOHN B. Is the BL Lacertae Object AO 0235+164 Being Lensed by Its Intervening Mg II Absorber? *Roberto G. Abraham, Carolin S. Crawford, Michael R. Merrifield, John B. Hutchings, & Ian M. McHardy.* 415, 101, 186-C5 (1993)
- HWANG, JAI-CHAN. Evolution of Ideal-Fluid Cosmological Perturbations. *Jai-chan Hwang.* 415, 486, 193-G12 (1993)
- HWANG, UNA. High-Resolution X-Ray Spectroscopy of the Supernova Remnant N132D. *Una Hwang, John P. Hughes, Claude R. Canizares, & Thomas H. Markert.* 414, 219, 172-F11 (1993)
- IBÁÑEZ S., MIGUEL H. Propagation of Hydrodynamic Waves in Optically Thin Plasmas. *Miguel H. Ibáñez S., & Orlando B. Escalona T.* 415, 335, 189-B7 (1993)
- IBEN, ICKO, JR. On Why Intermediate-Mass Stars Become Giants after the Exhaustion of Hydrogen in Their Cores. *Icko Iben, Jr.* 415, 767, 197-D5 (1993)
- IRWIN, JUDITH A. The Neutral Hydrogen Distribution of NGC 3079: Erratum. *Judith A. Irwin & E. R. Seaquist.* 415, 415, 190-B3 (1993) (Orig. paper in 371, 111, 61-D9 (1991))
- ISENSE, JOAN E. Ultraviolet Photometry of OB Associations in M31. *Jesse K. Hill, Joan E. Isensee, Ralph C. Bohlin, Robert W. O'Connell, Morton S. Roberts, Andrew M. Smith, & Theodore P. Stecher.* 414, L9, 175-C11 (1993)
- ISRAEL, F. P. Kiloparsec-Scale Molecular Gas Excitation in Spiral Galaxies. *W. F. Wall, D. T. Jaffe, F. N. Bash, F. P. Israel, P. R. Maloney, & F. Baas.* 414, 98, 171-C5 (1993)
- ITOH, NAOIKI. Neutrino Energy Loss in Stellar Interiors. V. Recombination Neutrino Process. *Yasuharu Kohyama, Naoki Itoh, Akihiko Obama, & Haruhiko Mutoh.* 415, 267, 188-C9 (1993)
- IWAMOTO, KOHICHI. Type II Supernovae from 8-10 M_{\odot} Asymptotic Giant Branch Stars. *Masaaki Hashimoto, Kohichi Iwamoto, & Ken'ichi Nomoto.* 414, L105, 186-A1 (1993)
- JACOBY, GEORGE H. The Radial Velocities of Planetary Nebulae in NGC 3379. *Robin Ciardullo, George H. Jacoby, & Herwig B. Dejonghe.* 414, 454, 176-G3 (1993)
- The Planetary Nebula System and Dynamics of NGC 5128. I. Planetary Nebulae as Standard Candles. *Xiaohui Hui, Holland C. Ford, Robin Ciardullo, & George H. Jacoby.* 414, 463, 177-A1 (1993)
- Planetary Nebulae as Standard Candles. IX. The Distance to the Fornax Cluster. *Russet McMillan, Robin Ciardullo, & George H. Jacoby.* 416, 62, 201-G7 (1993)
- JAEEKEL, UWE. Ion Acceleration in Impulsive Solar Flares. *Jürgen Steinacker, Uwe Jaekel, & Reinhard Schlickeiser.* 415, 342, 189-C1 (1993)
- JAFFE, D. T. Kiloparsec-Scale Molecular Gas Excitation in Spiral Galaxies. *W. F. Wall, D. T. Jaffe, F. N. Bash, F. P. Israel, P. R. Maloney, & F. Baas.* 414, 98, 171-C5 (1993)
- JAIN, REKHA. Do p-Mode Frequency Shifts Suggest a Hotter Chromosphere at Solar Maximum? *Rekha Jain & B. Roberts.* 414, 898, 182-D12 (1993)
- JANSEN, DAVID J. Detection of the Interstellar NH₂ Radical. *Ewine F. van Dishoeck, David J. Jansen, Peter Schilke, & T. G. Phillips.* 416, L83, 216-E10 (1993)
- JATENCO-PEREIRA, V. Formation of Quasar Clouds by Thermal Instability in the Presence of Alfvén Wave Heating. *D. R. Gonçalves, V. Jatenco-Pereira, & R. Opher.* 414, 57, 170-F12 (1993)
- JEFFERIES, S. M. Accurate Measurement of the Geometry for a Full-Disk Solar Image and Estimation of the Observational Point Spread Function. *C. G. Toner & S. M. Jefferies.* 415, 852, 198-E11 (1993)
- JEFFERIES, STUART M. Restoration of Astronomical Images by Iterative Blind Deconvolution. *Stuart M. Jefferies & Julian C. Christou.* 415, 862, 198-F9 (1993)
- JEFFERY, DAVID J. See KIRSHNER, ROBERT P., et al. SN 1992A: Ultraviolet and Optical Studies Based on HST, IUE, and CTIO Observations.
- The Relativistic Sobolev Method Applied to Homologously Expanding Atmospheres. *David J. Jeffery.* 415, 734, 197-A5 (1993)
- JELINSKY, P. Extreme Ultraviolet Explorer Observations of the RS Canum Venaticorum Systems AR Lacertae and II Pegasi. *R. J. Patterer, P. W. Vedder, P. Jelinsky, A. Brown, & S. Bowyer.* 414, L57, 185-B13 (1993)
- JELINSKY, PATRICK. Extreme Ultraviolet Emission from Late-Type Stars: Initial Results from Extreme Ultraviolet Explorer. *Peter W. Vedder, Robert J. Patterer, Patrick Jelinsky, Alex Brown, & Stuart Bowyer.* 414, L61, 185-C5 (1993)
- JIA, H. G. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- JIANG, G. Z. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- JIAO, S. Q. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- JOHNSON, W. N. OSSE Observations of the Bright Seyfert 1 Galaxy IC 4329A. *A. C. Fabian, K. Nandra, A. Celotti, M. J. Rees, J. E. Grove, & W. N. Johnson.* 416, L57, 216-C1 (1993)
- JORDAN, STUART D. Chromospheric Heating by Acoustic Shock Waves. *Stuart D. Jordan.* 414, 337, 174-B12 (1993)
- KAISER, NICK. Using the Schrödinger Equation to Simulate Collisionless Matter. *Lawrence M. Widrow & Nick Kaiser.* 416, L71, 216-D6 (1993)

- KAISIG, M. Three-dimensional Magnetohydrodynamics of the Emerging Magnetic Flux in the Solar Atmosphere. *R. Matsumoto, T. Tajima, K. Shibata, & M. Kaisig*. 414, 357, 174-D8 (1993)
- KAJINO, F. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- KALKOFEN, W. Dynamics of the Solar Chromosphere. I. Long-Period Network Oscillations. *B. W. Lites, R. J. Rutten, & W. Kalkofen*. 414, 345, 174-C8 (1993)
- KAMEYA, OSAMU. High Spatial Resolution Observations of CO in CRL 618. *Katsunori M. Shibata, Shuji Deguchi, Naomi Hirano, Osamu Kameya, & Shin'ichi Tamura*. 415, 708, 196-F1 (1993)
- KAMPER, KARL W. Goodbye to Polaris the Cepheid. *J. D. Fernie, Karl W. Kamper, & S. Seager*. 416, 820, 213-F1 (1993)
- KANBACH, G. See NOLAN, P. L., et al. Observation of High-Energy Gamma Rays from the Quasi-stellar Object CTA 102. See THOMPSON, D. J., et al. EGRET Observations of Active Galactic Nuclei: 0836+710, 0454-234, 0804+499, 0906+430, 1510-089, and 2356+196. See LIN, Y. C., et al. EGRET Limits on High-Energy Gamma-Ray Emission from X-Ray- and Low-Energy Gamma-Ray-selected Seyfert Galaxies.
- KANBUR, SHASHI M. On Cepheids at Maximum and Minimum Light. *Norman R. Simon, Shashi M. Kanbur, & Dimitri Mihalas*. 414, 310, 173-G5 (1993)
- KANE, SHARAD R. Temperature and Density Structure of the 1991 November 2 Flare Observed by the YOHKO Soft X-Ray Telescope and Hard X-Ray Telescope. *James M. McTiernan, Sharad R. Kane, Jon M. Loran, James R. Lemen, Loren W. Acton, Hirohisa Hara, Saku Tsuneta, & Takeo Kosugi*. 416, L91, 216-F6 (1993)
- KANG, HYESUNG. A Cosmological Hydrodynamic Code Based on the Total Variation Diminishing Scheme. *Dongsu Ryu, Jeremiah P. Ostriker, Hyesung Kang, & Renyue Cen*. 414, 1, 170-B1 (1993)
- KASAHARA, K. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- KEENE, JOCELYN. The Detection of [C I] in Molecular Outflows Associated with Young Stellar Objects. *Christopher K. Walker, Gopal Narayanan, Thomas H. Büttgenbach, John E. Carlstrom, Jocelyn Keene, & T. G. Phillips*. 415, 672, 196-B10 (1993)
- Atomic Carbon in the Envelope of IRC +10216. *Jocelyn Keene, K. Young, T. G. Phillips, Thomas H. Büttgenbach, & John E. Carlstrom*. 415, L131, 200-E1 (1993)
- KENNICUTT, ROBERT C., JR. Hidden Supernova Remnants in the Large Magellanic Cloud H II Complex N44. *You-Hua Chu, Mordecai-Mark Mac Low, Guillermo Garcia-Segura, Bart Wakker, & Robert C. Kennicutt, Jr.* 414, 213, 172-F2 (1993)
- KENYON, SCOTT. Boundary Layers in Pre-Main-Sequence Accretion Disks. *Robert Popham, Ramesh Narayan, Lee Hartmann, & Scott Kenyon*. 415, L127, 200-D9 (1993)
- KENYON, SCOTT J. The Embedded Young Stars in the Taurus-Auriga Molecular Cloud. I. Models for Spectral Energy Distributions. *Scott J. Kenyon, Nuria Calvet, & Lee Hartmann*. 414, 676, 179-F1 (1993)
- The Embedded Young Stars in the Taurus-Auriga Molecular Cloud. II. Models for Scattered Light Images. *Scott J. Kenyon, Barbara A. Whitney, Mercedes Gomez, & Lee Hartmann*. 414, 773, 180-G9 (1993)
- KEPNER, J. Hubble Space Telescope Images of the Subarcsecond Jet in DG Tauri. *J. Kepner, P. Hartigan, C. Yang, & S. Strom*. 415, L119, 200-C8 (1993)
- KHARE, B. N. Polycyclic Aromatic Hydrocarbons in the Atmospheres of Titan and Jupiter. *Carl Sagan, B. N. Khare, W. R. Thompson, G. D. McDonald, Michael R. Wing, Jeffrey L. Bada, Tuan Vo-Dinh, & E. T. Arakawa*. 414, 399, 175-A3 (1993)
- KINNEY, ANNE L. Hubble Space Telescope Ultraviolet Spectroscopy of the Highly Polarized but Quiescent Quasar O1 287. *Robert Antonucci, Anne L. Kinney, & Todd Hurt*. 414, 506, 177-E1 (1993)
- KIRSHNER, ROBERT P. SN 1992A: Ultraviolet and Optical Studies Based on HST, IUE, and CTIO Observations. *Robert P. Kirshner, David J. Jeffery, Bruno Leibundgut, Peter M. Challis, George Sonneborn, M. M. Phillips, N. B. Suntzeff, R. Chris Smith, P. Frank Winkler, Cláudia Winge, Mario Hamuy, Deidre A. Hunter, Katherine C. Roth, J. C. Blades, David Branch, Roger A. Chevalier, Claes Fransson, Nino Panagia, Robert V. Wagoner, J. Craig Wheeler, & Robert P. Harkness*. 415, 589, 195-B10 (1993)
- KLEY, W. On the Angular Momentum Transport Associated with Convective Eddies in Accretion Disks. *W. Kley, J. C. B. Papaloizou, & D. N. C. Lin*. 416, 679, 211-G7 (1993)
- On the Nonaxisymmetric Convective Instabilities in Accretion Disks. *D. N. C. Lin, J. C. B. Papaloizou, & W. Kley*. 416, 689, 212-A4 (1993)
- KLYPIN, ANATOLY. Structure Formation with Cold plus Hot Dark Matter. *Anatoly Klypin, Jon Holtzman, Joel Primack, & Enikő Regő*. 416, 1, 201-B1 (1993)
- KNAPEN, JOHAN H. Star Formation in the Spiral Arms of NGC 4321. II. H I Distribution and Kinematics. *Johan H. Knapen, Jordi Cepa, John E. Beckman, M. Soledad del Rio, & Alan Pedlar*. 416, 563, 210-D1 (1993)
- KNEE, H. See DROTLEFF, H. W., et al. Reaction Rates of the s-Process Neutron Sources $^{22}\text{Ne}(\alpha, n)^{25}\text{Mg}$ and $^{13}\text{C}(\alpha, n)^{16}\text{O}$.
- KNIFFEN, D. A. See NOLAN, P. L., et al. Observation of High-Energy Gamma Rays from the Quasi-stellar Object CTA 102. See THOMPSON, D. J., et al. EGRET Observations of Active Galactic Nuclei: 0836+710, 0454-234, 0804+499, 0906+430, 1510-089, and 2356+196. See LIN, Y. C., et al. EGRET Limits on High-Energy Gamma-Ray Emission from X-Ray- and Low-Energy Gamma-Ray-selected Seyfert Galaxies.
- KÖNIGL, ARIEH. Molecular Line Emission Models of Herbig-Haro Objects. II. HCO⁺ Emission. *Mark G. Wolfire & Arieh Königl*. 415, 204, 187-E6 (1993)
- KOENIGSBERGER, GLORIA. The "Baldwin Effect" in Wolf-Rayet Stars. *Patrick Morris, Peter S. Conti, Henny J. G. L. M. Lamers, & Gloria Koenigsberger*. 414, L25, 175-E7 (1993)
- KOGUT, A. Noncosmological Signal Contributions to the COBE DMR Anisotropy Maps. *C. L. Bennett, G. Hinshaw, A. Banday, A. Kogut, E. L. Wright, K. Loewenstein, & E. S. Cheng*. 414, L76, 185-D13 (1993)
- KOHYAMA, YASU HARU. Neutrino Energy Loss in Stellar Interiors. V. Recombination Neutrino Process. *Yasu haru Kohyama, Naoki Itoh, Akihiko Obama, & Haruhiko Mutoh*. 415, 267, 188-C9 (1993)
- KOJIMA, YASUFUMI. Normal Modes of Relativistic Stars in Slow Rotation Limit. *Yasufumi Kojima*. 414, 247, 173-B3 (1993)
- KOO, DAVID C. Counter-Evolution of Faint Field Galaxies. *David C. Koo, Caryl Gronwall, & Gustavo Bruzual A.* 415, L21, 191-G10 (1993)
- KORISTA, KIRK T. On the Geometry, Covering Factor, and Scattering-Emission Properties of QSO Broad Absorption-Line Regions. *Fred Hamann, Kirk T. Korista, & Simon L. Morris*. 415, 541, 194-E11 (1993)
- KOSUGI, T. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKO.
- KOSUGI, TAKEO. Temperature and Density Structure of the 1991 November 2 Flare Observed by the YOHKO Soft X-Ray Telescope and Hard X-Ray Telescope. *James M. McTiernan, Sharad R. Kane, Jon M. Loran, James R. Lemen, Loren W. Acton, Hirohisa Hara, Saku Tsuneta, & Takeo Kosugi*. 416, L91, 216-F6 (1993)
- KOUVELIOTOU, C. See NEMIROFF, R. J., et al. Searching Gamma-Ray Bursts for Gravitational Lensing Echoes: Implications for Compact Dark Matter.
- KRISHAN, V. Polarization Changes of Radiation through Stimulated Raman Scattering. *R. T. Gangadhara & V. Krishan*. 415, 505, 194-B6 (1993)
- KROLIK, JULIAN H. Active Galactic Nuclei Make the Cosmic X-Ray Background. *Andrzej A. Zdziarski, Piotr T. Życki, & Julian H. Krolik*. 414, L81, 185-E8 (1993)
- KRONBERG, P. P. The Crab Nebula's Cosmic-Ray Acceleration Zone Revealed. *P. P. Kronberg, H. Lesch, P. F. Ortiz, & M. F. Bietenholz*. 416, 251, 204-B13 (1993)
- KRUK, JEFFREY W. The Spectrum of EZ Canis Majoris (HD 50896) to the Lyman Limit with the Hopkins Ultraviolet Telescope. *Stephan R. McCandliss, Richard H. Buss, Jr., William P. Blair,*

- Charles W. Bowers, Arthur F. Davidsen, Paul D. Feldman, & Jeffrey W. Kruk. 416, 372, 205-F3 (1993)
- KUCHAR, THOMAS A. A High-Resolution H I Survey of the Rosette Nebula. Thomas A. Kuchar & T. M. Bania. 414, 664, 179-D12 (1993)
- KUIPER, T. B. H. Refrigeration of the 18.3 GHz C_3H_2 Transition in Dark Cloud G1.6-0.25. T. B. H. Kuiper, J. B. Whiteoak, R.-S. Peng, W. L. Peters III, & J. E. Reynolds. 416, L33, 207-E7 (1993)
- KULKARNI, S. R. A Cold H II Region in the Molecular Globule G70.7+1.2. J. A. Phillips, J. S. Onello, & S. R. Kulkarni. 415, L143, 200-F8 (1993)
- A Search for Pulsars at High Galactic Latitudes. S. E. Thorsett, W. T. S. Deich, S. R. Kulkarni, J. Navarro, & G. Vasish. 416, 182, 203-C10 (1993)
- KUMAI, YASUKI. Formation of Globular Clusters and Galactic Environments. Yasuki Kumai, Yuichi Hashi, & Mitsuaki Fujimoto. 416, 576, 210-E5 (1993)
- KUNTZ, K. D. A Determination of the Distance to the High-Velocity Cloud Complex M. Laura Danly, C. E. Albert, & K. D. Kuntz. 416, L29, 207-D13 (1993)
- KURUCZ, R. L. The Mount Wilson Observatory Metallicity Index, C_{RV} : Comparison with Other Photometric Systems. W. H. Soon, Q. Zhang, S. L. Baliunas, & R. L. Kurucz. 416, 787, 213-C1 (1993)
- KWOK, SUN. Circumstellar Properties of S Stars. I. Dust Features. P. S. Chen & Sun Kwok. 416, 769, 213-A1 (1993)
- LABACIREN. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- LABONTE, B. J. The Source of 5 Minute Period Photospheric Umbral Oscillations. M. J. Penn & B. J. LaBonte. 415, 383, 189-F7 (1993)
- Direct Mapping of Solar Acoustic Power. C. G. Toner & B. J. LaBonte. 415, 847, 198-D6 (1993)
- LAGUNA, P. Gasdynamics of Relativistically Expanding Gamma-Ray Burst Sources: Kinematics, Energetics, Magnetic Fields, and Efficiency. P. Mészáros, P. Laguna, & M. J. Rees. 415, 181, 187-C7 (1993)
- LAINELA, M. Structure Function Analysis of High Radio Frequency Variability in the Metsähovi Monitoring Sample of Active Galactic Nuclei. M. Lainela & E. Valtaoja. 416, 485, 209-C12 (1993)
- LAMB, D. Q. A Semi-Analytic Model for Cyclotron Line Formation. J. C. L. Wang, I. Wasserman, & D. Q. Lamb. 414, 815, 181-D2 (1993)
- Gamma-Ray Bursts as a Probe of Large-Scale Structure in the Universe. D. Q. Lamb & Jean M. Quashnock. 415, L1, 191-E8 (1993)
- LAMBAS, D. G. Large-Scale Structure in Biased Cold Dark Matter Cosmologies. D. G. Lambas, M. G. Abadi, M. A. Nicotra, & P. B. Tissera. 414, 30, 170-D6 (1993)
- LAMBERT, DAVID L. Ultraviolet Transitions of Low Condensation Temperature Heavy Elements and New Data for Interstellar Arsenic, Selenium, Tellurium, and Lead. Jason A. Cardelli, S. R. Federman, David L. Lambert, & C. E. Theodosiou. 416, L41, 207-F5 (1993)
- LAMERS, HENNY J. G. L. M. The "Baldwin Effect" in Wolf-Rayet Stars. Patrick Morris, Peter S. Conti, Henny J. G. L. M. Lamers, & Gloria Koenigsberger. 414, L25, 175-E7 (1993)
- LAMPTON, MICHAEL. In-Flight Performance and Preliminary Results from the Far Ultraviolet Space Telescope (Faust) Flown on ATLAS-1. Stuart Bowyer, Timothy P. Sasseen, Michael Lampton, & Xiaoyi Wu. 415, 875, 198-G12 (1993)
- LANDIS, D. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- LANG, J. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKOH.
- LARSON, HAROLD P. Evidence for Hydrated Silicates toward SN 1987A. Ralf Timmermann & Harold P. Larson. 415, 820, 198-A13 (1993)
- LAU, YUN-TUNG. Long-Term Containment of Energetic Particles in Coronal Loops. Yun-Tung Lau, Theodore G. Northrop, & John M. Finn. 414, 908, 182-E10 (1993)
- LAWLER, J. E. Oscillator Strengths of the Si II 181 Nanometer Resonance Multiplet. S. D. Bergeson & J. E. Lawler. 414, L137, 186-D9 (1993)
- LAWRENCE, A. X-Ray Variability of Active Galactic Nuclei: A Universal Power Spectrum with Luminosity-dependent Amplitude. A. Lawrence & I. Papadakis. 414, L85, 185-F1 (1993)
- LE BOURLLOT, J. Bistability in Dark Cloud Chemistry. J. Le Bourlot, G. Pineau des Forêts, E. Roueff, & P. Schilke. 416, L87, 216-F1 (1993)
- LE FÈVRE, O. The Complex, Gravitationally Lensed Arc System in the X-Ray-selected Cluster of Galaxies MS 0440+0204. G. A. Luppino, I. M. Gioia, J. Annis, O. Le Fèvre, & F. Hammer. 416, 444, 208-G8 (1993)
- LEIBUNDGUT, BRUNO. See KIRSHNER, ROBERT P., et al. SN 1992A: Ultraviolet and Optical Studies Based on HST, IUE, and CTIO Observations.
- LEINSON, L. B. Neutrino Emission from the Bubble Phase of Stellar Nuclear Matter. L. B. Leinson. 415, 759, 197-C8 (1993)
- LEISING, M. D. SMM Observations of Gamma-Ray Transients. I. A Search for Variable Emission at MeV Energies from Five Galactic and Extragalactic Sources. M. J. Harris, G. H. Share, M. D. Leising, & J. E. Grove. 416, 601, 210-G8 (1993)
- LEISING, MARK D. On ^{26}Al and Other Short-lived Interstellar Radioactivity. Donald D. Clayton, Dieter H. Hartmann, & Mark D. Leising. 415, L25, 192-A1 (1993)
- LEMEN, JAMES R. Temperature and Density Structure of the 1991 November 2 Flare Observed by the YOHKOH Soft X-Ray Telescope and Hard X-Ray Telescope. James M. McTiernan, Sharad R. Kane, Jon M. Loran, James R. Lemen, Loren W. Acton, Hirohisa Hara, Saku Tsuneta, & Takeo Kosugi. 416, L91, 216-F6 (1993)
- LENGYEL-FREY, D. Evaluation of Emission Mechanisms at ω_{pe} Using Ulysses Observations of Type III Bursts. G. Thejappa, D. Lengyel-Frey, R. G. Stone, & M. L. Goldstein. 416, 831, 213-G1 (1993)
- LESAGE, A. Electron Impact Broadening Parameters Predictions from Regularities: Fe I, Fe II, Fe III, Fe IV, C IV, and Si IV. J. Purić, M. H. Miller, & A. Lesage. 416, 825, 213-F7 (1993)
- LESCH, H. The Crab Nebula's Cosmic-Ray Acceleration Zone Revealed. P. P. Kronberg, H. Lesch, P. F. Ortiz, & M. F. Bietenholz. 416, 251, 204-B13 (1993)
- LETAW, JOHN R. Comparison of Distributed Reacceleration and Leaky-Box Models of Cosmic-Ray Abundances ($3 \leq Z \leq 28$). John R. Letaw, Rein Silberberg, & C. H. Tsao. 414, 601, 178-F6 (1993)
- LI, J. J. Radio-selected BL Lacertae Objects and Some Correlations. J. H. Fan, G. Z. Xie, J. J. Li, J. Liu, S. L. Wen, R. R. Huang, Z. M. Tang, & Y. J. Wang. 415, 113, 186-D12 (1993)
- LI, ZHI-YUN. Electromagnetically Driven Relativistic Jets: A Class of Self-consistent Numerical Solutions. Zhi-Yun Li. 415, 118, 186-E4 (1993)
- LIEU, RICHARD. Synchrotron Radiation: An Inverse Compton Effect. Richard Lieu & W. Ian Axford. 416, 700, 212-B1 (1993)
- LIGHTMAN, ALAN P. Acceleration Efficiency in Nonthermal Sources and the Soft Gamma Rays from NGC 4151 Observed by OSSE and SIGMA. Andrzej A. Zdziarski, Alan P. Lightman, & Andrzej Maciołek-Niedźwiecki. 414, L93, 185-F13 (1993)
- LIN, D. N. C. On the Angular Momentum Transport Associated with Convective Eddies in Accretion Disks. W. Kley, J. C. B. Papaloizou, & D. N. C. Lin. 416, 679, 211-G7 (1993)
- On the Nonaxisymmetric Convective Instabilities in Accretion Disks. D. N. C. Lin, J. C. B. Papaloizou, & W. Kley. 416, 689, 212-A4 (1993)
- LIN, R. P. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- LIN, Y. C. See NOLAN, P. L., et al. Observation of High-Energy Gamma Rays from the Quasi-stellar Object CTA 102.
- See THOMPSON, D. J., et al. EGRET Observations of Active Galactic Nuclei: 0836+710, 0454-234, 0804+499, 0906+430, 1510-089, and 2356+196.
- EGRET Limits on High-Energy Gamma-Ray Emission from X-Ray- and Low-Energy Gamma-Ray-selected Seyfert Galaxies. Y. C. Lin, D. L. Bertsch, B. L. Dingus, C. E. Fichtel, R. C. Hartman, S. D. Hunter, G. Kanbach, D. A. Kniffen, J. R. Mattox, H. A. Mayer-Hasselwander, P. F. Michelson, C. von Montigny, P. L. Nolan,

- E. Schneid, P. Sreekumar, & D. J. Thompson. 416, L53, 216-B11 (1993)
- LINGENFELTER, R. E. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- A Classical Gamma-Ray Burst Repeater, GBS 0855-00? V. C. Wang & R. E. Lingenfelter. 416, L13, 207-C5 (1993)
- LINGENFELTER, RICHARD E. Compton Backscattered Annihilation Radiation and the Mass of Nova Muscae. *Xin-Min Hua & Richard E. Lingenfelter*. 416, L17, 207-C11 (1993)
- LISZT, HARVEY S. Density, Temperature, and Isotopic Abundance in Molecular Gas around ζ Ophiuchi. *Harvey S. Liszt*. 414, 242, 173-A10 (1993)
- LITES, B. W. Dynamics of the Solar Chromosphere. I. Long-Period Network Oscillations. *B. W. Lites, R. J. Rutten, & W. Kalkofen*. 414, 345, 174-C8 (1993)
- LITES, BRUCE W. The Magnetohydrodynamics of Umbral Flux Tubes. II. Spectroscopic Properties. *Delev Degenhardt & Bruce W. Lites*. 416, 875, 214-C11 (1993)
- LIU, J. Radio-selected BL Lacertae Objects and Some Correlations. *J. H. Fan, G. Z. Xie, J. J. Li, J. Liu, S. L. Wen, R. R. Huang, Z. M. Tang, & Y. J. Wang*. 415, 113, 186-D12 (1993)
- LIVNE, ELI. On the Instability of Deflagration Fronts in White Dwarfs. *Eli Livne & David Arnett*. 415, L107, 200-B1 (1993)
- LOEWENSTEIN, K. Noncosmological Signal Contributions to the COBE DMR Anisotropy Maps. *C. L. Bennett, G. Hinshaw, A. Banday, A. Kogut, E. L. Wright, K. Loewenstein, & E. S. Cheng*. 414, L76, 185-D13 (1993)
- LOPEZ, J. A. Kinematical Evidence for a Rotating, Episodic Jet in the Planetary Nebula Fleming 1. *J. A. Lopez, J. Meaburn, & J. W. Palmer*. 415, L135, 200-E8 (1993)
- LORAN, JON M. Temperature and Density Structure of the 1991 November 2 Flare Observed by the YOHKOH Soft X-Ray Telescope and Hard X-Ray Telescope. *James M. McTiernan, Sharad R. Kane, Jon M. Loran, James R. Lemen, Loren W. Acton, Hirohisa Hara, Saku Tsuneta, & Takeo Kosugi*. 416, L91, 216-F6 (1993)
- LOU, YU-QING. Alfvénic Fluctuations in a Relativistic Wind with a Spiral Magnetic Field and Random Magnetic Field Structures in the Crab Nebula. *Yu-Qing Lou*. 414, 656, 179-D2 (1993)
- Discrete High-Frequency p -Modes as Probes of Structures in the Chromosphere, Transition Region, and Lower Corona of the Sun. *Yu-Qing Lou*. 414, L141, 186-E1 (1993)
- LOW, B. C. A Class of Three-dimensional Isothermal Laminated Equilibria and Their Stability. *Y. P. Chou, B. C. Low, & A. Bhattacharjee*. 416, 379, 205-F12 (1993)
- LUBIN, LORI M. The Relation between Velocity Dispersion and Temperature in Clusters: Limiting the Velocity Bias. *Lori M. Lubin & Neta A. Bahcall*. 415, L17, 191-G5 (1993)
- LUGGER, PHYLLIS M. Simulations of Compact Groups of Galaxies: The Effect of the Dark Matter Distribution. *Paul W. Bode, Haldan N. Cohn, & Phyllis M. Lugger*. 416, 17, 201-C5 (1993)
- LUKE, P. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- LUO, SHAN. Can Extra Power Explain Periodicity on Large Scales? *Shan Luo & Ethan T. Vishniac*. 415, 450, 193-D9 (1993)
- LUPPINO, G. A. The Complex, Gravitationally Lensed Arc System in the X-Ray-selected Cluster of Galaxies MS 0440+0204. *G. A. Luppino, I. M. Gioia, J. Annis, O. Le Fèvre, & F. Hammer*. 416, 444, 208-G8 (1993)
- MACCACCARO, T. Unified Model for X-Ray- and Radio-selected BL Lacertae Objects. *A. Celotti, L. Maraschi, G. Ghisellini, A. Caccianiga, & T. Maccacaro*. 416, 118, 202-D13 (1993)
- MACIOLEK-NIEDZIEWICKI, ANDRZEJ. Acceleration Efficiency in Non-thermal Sources and the Soft Gamma Rays from NGC 4151 Observed by OSSE and SIGMA. *Andrzej A. Zdziarski, Alan P. Lightman, & Andrzej Maciolek-Niedziewicki*. 414, L93, 185-F13 (1993)
- MAC LOW, MORDECAI-MARK. Hidden Supernova Remnants in the Large Magellanic Cloud H II Complex N44. *You-Hua Chu, Mordecai-Mark Mac Low, Guillermo Garcia-Segura, Bart Wakker, & Robert C. Kennicutt, Jr.* 414, 213, 172-F2 (1993)
- MADDEN, N. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- MÄHÖNEN, PETRI. Effects of Long Cosmic Strings on the Anisotropies of the Cosmic Background Radiation. *Tetsuya Hara, Petri Mähönen, & Shigeru Miyoshi*. 414, 421, 176-D3 (1993)
- Large-Scale Peculiar Velocity Field Due to Infinitely Long Cosmic Strings. *Tetsuya Hara, Petri Mähönen, & Shigeru Miyoshi*. 415, 445, 193-D1 (1993)
- MAGGIO, A. ROSAT X-Ray Detection of ϵ Taurus: Revisiting the Coronal and Transition Region Emission of the Hyades Giants. *A. Collura, A. Maggio, G. Micela, S. Sciortino, F. R. Harnden, Jr., & R. Rosner*. 416, 204, 203-E8 (1993)
- MAGRIS C., GLADIS. Effects of Internal Dust on the Narrow-Line Region Lyman and Balmer Decrements. *Luc Binette, John Wang, Montserrat Villar-Martin, Peter G. Martin, & Gladis Magris C.* 414, 535, 177-G9 (1993)
- MALET, I. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- MALHOTRA, SANGEETA. On Graphite and the 2175 Å Extinction Profile. *B. T. Draine & Sangeeta Malhotra*. 414, 632, 179-B1 (1993)
- MALIN, DAVID. SN 1978K: An Extraordinary Supernova in the Nearby Galaxy NGC 1313. *Stuart Ryder, Lister Staveley-Smith, Michael Dopita, Robert Petre, Edward Colbert, David Malin, & Eric Schlegel*. 416, 167, 203-B6 (1993)
- MALKAN, MATTHEW A. Does a Luminosity-dependent Continuum Shape Cause the Baldwin Effect? *Wei Zheng & Matthew A. Malkan*. 415, 517, 194-C6 (1993)
- MALONE, D. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- MALONEY, P. R. Kiloparsec-Scale Molecular Gas Excitation in Spiral Galaxies. *W. F. Wall, D. T. Jaffe, F. N. Bash, F. P. Israel, P. R. Maloney, & F. Baas*. 414, 98, 171-C5 (1993)
- MALONEY, PHILIP. Sharp Edges to Neutral Hydrogen Disks in Galaxies and the Extragalactic Radiation Field. *Philip Maloney*. 414, 41, 170-E8 (1993)
- MAOZ, DAN. Early-Type Galaxies, Dark Halos, and Gravitational Lensing Statistics. *Dan Maoz & Hans-Walter Rix*. 416, 425, 208-F1 (1993)
- MAOZ, EYAL. Do Observations Exclude Gamma-Ray Bursts Originating in the Oort Cloud of Comets? *Eyal Maoz*. 414, 877, 182-B12 (1993)
- MARAN, S. P. A Search for Proton Beams during Flares on AU Microscopii. *R. D. Robinson, K. G. Carpenter, B. E. Woodgate, & S. P. Maran*. 414, 872, 182-B5 (1993)
- MARASCHI, L. Unified Model for X-Ray- and Radio-selected BL Lacertae Objects. *A. Celotti, L. Maraschi, G. Ghisellini, A. Caccianiga, & T. Maccacaro*. 416, 118, 202-D13 (1993)
- MARISKA, J. T. See DOSCHKE, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKOH.
- MARKERT, THOMAS H. High-Resolution X-Ray Spectroscopy of the Supernova Remnant N132D. *Una Hwang, John P. Hughes, Claude R. Canizares, & Thomas H. Markert*. 414, 219, 172-F11 (1993)
- MARSH, M. C. See HOLBERG, J. B., et al. Two New Extremely Iron-rich Hot DA White Dwarfs and the Nature of the EUV Opacity.
- MARSHALL, H. L. Observations of PKS 2155-304 with the *Extreme Ultraviolet Explorer*. *H. L. Marshall, T. E. Carone, & A. Fruscione*. 414, L53, 185-B7 (1993)
- MARSTON, A. P. Threshold Star-Formation Effects in the Peculiar Galaxy Arp 10 (= VV 362). *V. Charmandaris, P. N. Appleton, & A. P. Marston*. 414, 154, 172-A1 (1993)
- MARTEL, ANDRÉ. Spectroscopic Study of the CFA Sample of Seyfert Galaxies. *Donald E. Osterbrock & André Martel*. 414, 552, 178-B2 (1993)
- MARTÍ, J. HH 80-81: A Highly Collimated Herbig-Haro Complex Powered by a Massive Young Star. *J. Martí, L. F. Rodríguez, & B. Reipurth*. 416, 208, 203-F1 (1993)
- MARTIN, P. G. A New Method to Calculate the Extinction Properties of Irregularly Shaped Particles. *François Rouleau & P. G. Martin*. 414, 803, 181-C2 (1993)
- Proximity Effects in Clusters of Particles. *François Rouleau & P. G. Martin*. 416, 707, 212-B10 (1993)

- MARTIN, PETER G. Effects of Internal Dust on the Narrow-Line Region Lyman and Balmer Decrements. *Luc Binette, John Wang, Moniserrat Villar-Martin, Peter G. Martin, & Gladis Magris C.* 414, 535, 177-G9 (1993)
- MARTÍN-PINTADO, J. Shear in the IRAS 3282 Outflow. *M. Tafalla, R. Bachiller, J. Martín-Pintado, & M. C. H. Wright.* 415, L139, 200-F1 (1993)
- MASSAGLIA, S. Radiative Instability in Synchrotron-emitting Plasmas. *P. Rossi, G. Bodo, S. Massaglia, & A. Ferrari.* 414, 112, 171-D7 (1993)
- MASSON, COLIN R. Properties of Jet-driven Molecular Outflows. *Colin R. Masson & Lawrence M. Chernin.* 414, 230, 172-G10 (1993)
- MATHESON, T. Interpretation of the Early Spectra of SN 1993J in M81. *E. Baron, P. H. Hauschildt, D. Branch, R. M. Wagner, S. J. Austin, A. V. Filippenko, & T. Matheson.* 416, L21, 207-D2 (1993)
- MATHESON, THOMAS. The "Type IIb" Supernova 1993J in M81: A Close Relative of Type Ib Supernovae. *Alexei V. Filippenko, Thomas Matheson, & Luis C. Ho.* 415, L103, 200-A8 (1993)
- MATHEWS, G. J. The QCD Phase Transition and Supernova Core Collapse. *N. A. Gentile, M. B. Aufderheide, G. J. Mathews, F. D. Swesty, & G. M. Fuller.* 414, 701, 180-A3 (1993)
- MATHUR, SMITA. The ROSAT Spectrum of 3C 351: A Warm Absorber in an X-Ray-"quiet" Quasar? *Fabrizio Fiore, Martin Elvis, Smita Mathur, Belinda J. Wilkes, & Jonathan C. McDowell.* 415, 129, 186-F1 (1993)
- MATSUMOTO, R. Three-dimensional Magnetohydrodynamics of the Emerging Magnetic Flux in the Solar Atmosphere. *R. Matsumoto, T. Tajima, K. Shibata, & M. Kaisig.* 414, 357, 174-D8 (1993)
- MATTHESS, J. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- MATTEUCCI, FRANCESCA. Stellar Mass Loss in Elliptical Galaxies and the Fueling of Active Galactic Nuclei. *Paolo Padovani & Francesca Matteucci.* 416, 26, 201-D2 (1993)
- MATTOX, J. R. See NOLAN, P. L., et al. Observation of High-Energy Gamma Rays from the Quasi-stellar Object CTA 102.
- See THOMPSON, D. J., et al. EGRET Observations of Active Galactic Nuclei: 0836+710, 0454-234, 0804+499, 0906+430, 1510-089, and 2356+196.
- See LIN, Y. C., et al. EGRET Limits on High-Energy Gamma-Ray Emission from X-Ray- and Low-Energy Gamma-Ray-selected Seyfert Galaxies.
- MAUAS, PABLO J. D. The White-Light Flare of 1982 June 15: A Midchromospheric Kernel. *Pablo J. D. Mauas.* 414, 928, 182-G10 (1993)
- MAUCHE, CHRISTOPHER W. *Extreme Ultraviolet Explorer* Observations of the Magnetic Cataclysmic Variable RE 1938-461. *John K. Warren, John V. Vallerga, Christopher W. Mauche, Koji Mukai, & Oswald H. W. Siegmund.* 414, L69, 185-D2 (1993)
- MAYER-HASSELWANDER, H. A. See NOLAN, P. L., et al. Observation of High-Energy Gamma Rays from the Quasi-stellar Object CTA 102.
- See THOMPSON, D. J., et al. EGRET Observations of Active Galactic Nuclei: 0836+710, 0454-234, 0804+499, 0906+430, 1510-089, and 2356+196.
- See LIN, Y. C., et al. EGRET Limits on High-Energy Gamma-Ray Emission from X-Ray- and Low-Energy Gamma-Ray-selected Seyfert Galaxies.
- MAYLE, R. W. Convection above the Neutrinosphere in Type II Supernovae. *D. S. Miller, J. R. Wilson, & R. W. Mayle.* 415, 278, 188-D12 (1993)
- MCCANDLISS, STEPHAN R. The Spectrum of EZ Canis Majoris (HD 50896) to the Lyman Limit with the Hopkins Ultraviolet Telescope. *Stephan R. McCandliss, Richard H. Buss, Jr., William P. Blair, Charles W. Bowers, Arthur F. Davidsen, Paul D. Feldman, & Jeffrey W. Kruk.* 416, 372, 205-F3 (1993)
- MCDONALD, G. D. Polycyclic Aromatic Hydrocarbons in the Atmospheres of Titan and Jupiter. *Carl Sagan, B. N. Khare, W. R. Thompson, G. D. McDonald, Michael R. Wing, Jeffrey L. Bada, Tuan Vo-Dinh, & E. T. Arakawa.* 414, 399, 175-A3 (1993)
- MCDOWELL, JONATHAN C. The ROSAT Spectrum of 3C 351: A Warm Absorber in an X-Ray-"quiet" Quasar? *Fabrizio Fiore, Martin Elvis, Smita Mathur, Belinda J. Wilkes, & Jonathan C. McDowell.* 415, 129, 186-F1 (1993)
- MCGRATH, M. A. Detection of [O II] $\lambda 2471$ from the Io Plasma Torus. *M. A. McGrath, P. D. Feldman, D. F. Strobel, H. W. Moos, & G. E. Ballester.* 415, L55, 192-D7 (1993)
- MCHARDY, IAN M. Is the BL Lacertae Object AO 0235+164 Being Lensed by Its Intervening Mg II Absorber? *Roberto G. Abraham, Carolin S. Crawford, Michael R. Merrifield, John B. Hutchings, & Ian M. McHardy.* 415, 101, 186-C5 (1993)
- MCKERNAN, B. The Iron K Line as a Probe of Beamed X-Ray Emission in Active Galactic Nuclei. *T. Yaqoob, B. McKernan, C. Done, P. J. Serlemis, & K. A. Weaver.* 416, L5, 207-B7 (1993)
- McMILLAN, RUSSET. Planetary Nebulae as Standard Candles. IX. The Distance to the Fornax Cluster. *Russet McMillan, Robin Ciardullo, & George H. Jacoby.* 416, 62, 201-G7 (1993)
- McMILLAN, STEPHEN L. W. An $O(N \log N)$ Integration Scheme for Collisional Stellar Systems. *Stephen L. W. McMillan & Sverre J. Aarseth.* 414, 200, 172-E1 (1993)
- Gravitational Radiation from Nonaxisymmetric Collisions of Neutron Stars. *Joan M. Centrella & Stephen L. W. McMillan.* 416, 719, 212-C10 (1993)
- McTIERNAN, JAMES M. Temperature and Density Structure of the 1991 November 2 Flare Observed by the YOHKOH Soft X-Ray Telescope and Hard X-Ray Telescope. *James M. McTiernan, Sharad R. Kane, Jon M. Loran, James R. Lemen, Loren W. Acton, Hirohisa Hara, Saku Tsuneta, & Takeo Kosugi.* 416, L91, 216-F6 (1993)
- MEABURN, J. Kinematical Evidence for a Rotating, Episodic Jet in the Planetary Nebula Fleming 1. *J. A. Lopez, J. Meaburn, & J. W. Palmer.* 415, L135, 200-E8 (1993)
- MEEGAN, C. A. See NEMIROFF, R. J., et al. Searching Gamma-Ray Bursts for Gravitational Lensing Echoes: Implications for Compact Dark Matter.
- MEI, D. M. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- MEINEL, R. The Einsteinian Gravitational Field of the Rigidly Rotating Disk of Dust. *G. Neugebauer & R. Meinel.* 414, L97, 185-G5 (1993)
- MELIA, FULVIO. Focusing of Alfvénic Wave Power in the Context of Gamma-Ray Burst Emissivity. *Marco Fatuzzo & Fulvio Melia.* 414, L89, 185-F7 (1993)
- MELNICK, GARY J. Discovery of Interstellar Water Lines at 437, 439, and 471 GHz: Strong Case for Water Maser Formation behind C-Type Shocks. *Gary J. Melnick, Karl M. Menten, Thomas G. Phillips, & Todd Hunter.* 416, L37, 207-E13 (1993)
- MELOTT, ADRIAN L. Improving the Reconstruction of the Velocity Potential and Primordial Density Fluctuations by Choice of Smoothing Windows. *Adrian L. Melott.* 414, L73, 185-D8 (1993)
- MÉNARD, FRANÇOIS. Disks around Pre-Main-Sequence Binary Systems: The Case of Haro 6-10. *François Ménard, Jean-Louis Monin, Françoise Angelucci, & Daniel Rouan.* 414, L117, 186-B5 (1993)
- MENCI, N. Distant Clusters of Galaxies Detected by X-Rays. *A. Cavaliere, S. Colafrancesco, & N. Menci.* 415, 50, 185-F1 (1993)
- MENG, L. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- MENG, X. R. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- MENTEN, KARL M. Discovery of Interstellar Water Lines at 437, 439, and 471 GHz: Strong Case for Water Maser Formation behind C-Type Shocks. *Gary J. Melnick, Karl M. Menten, Thomas G. Phillips, & Todd Hunter.* 416, L37, 207-E13 (1993)
- MERAFINA, M. Stability of Dense Stellar Clusters against Relativistic Collapse. *G. S. Bisnovatyi-Kogan, M. Merafina, R. Ruffini, & E. Vesperini.* 414, 187, 172-C13 (1993)
- MERRIFIELD, MICHAEL R. Is the BL Lacertae Object AO 0235+164 Being Lensed by Its Intervening Mg II Absorber? *Roberto G. Abraham, Carolin S. Crawford, Michael R. Merrifield, John B. Hutchings, & Ian M. McHardy.* 415, 101, 186-C5 (1993)
- MÉSZÁROS, P. Gasdynamics of Relativistically Expanding Gamma-Ray Burst Sources: Kinematics, Energetics, Magnetic Fields, and Efficiency. *P. Mészáros, P. Laguna, & M. J. Rees.* 415, 181, 187-C7 (1993)

- Finite-Velocity Effects on Atoms in Strong Magnetic Fields and Implications for Neutron Star Atmospheres. *G. G. Pavlov & P. Mészáros*. 416, 752, 212-F8 (1993)
- METCALF, T. R. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKOH.
- MICELA, G. X-Ray Emission at the Low-Mass End: Results from an Extensive Einstein Observatory Survey. *M. Barbera, G. Micela, S. Sciortino, F. R. Harnden, Jr., & R. Rosner*. 414, 846, 181-F10 (1993)
- ROSAT X-Ray Detection of ϵ Tauri: Revisiting the Coronal and Transition Region Emission of the Hyades Giants. *A. Collura, A. Maggio, G. Micela, S. Sciortino, F. R. Harnden, Jr., & R. Rosner*. 416, 204, 203-E8 (1993)
- MICHAUD, GEORGES. Diffusion of Lithium and Beryllium in Evolving, Nonrotating Main-Sequence A and F Stars. *Jacques Richer & Georges Michaud*. 416, 312, 205-A5 (1993)
- MICHELSON, P. F. See NOLAN, P. L., et al. Observation of High-Energy Gamma Rays from the Quasi-stellar Object CTA 102.
- See THOMPSON, D. J., et al. EGRET Observations of Active Galactic Nuclei: 0836+710, 0454-234, 0804+499, 0906+430, 1510-089, and 2356+196.
- See LIN, Y. C., et al. EGRET Limits on High-Energy Gamma-Ray Emission from X-Ray- and Low-Energy Gamma-Ray-selected Seyfert Galaxies.
- MIHALAS, DIMITRI. On Cepheids at Maximum and Minimum Light. *Norman R. Simon, Shashi M. Kanbur, & Dimitri Mihalas*. 414, 310, 173-G5 (1993)
- MILLER, D. S. Convection above the Neutrinosphere in Type II Supernovae. *D. S. Miller, J. R. Wilson, & R. W. Mayle*. 415, 278, 188-D12 (1993)
- MILLER, M. H. Electron Impact Broadening Parameters Predictions from Regularities: Fe I, Fe II, Fe III, Fe IV, C IV, and Si IV. *J. Purit, M. H. Miller, & A. Lesage*. 416, 825, 213-F7 (1993)
- MIMACIREN. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- MIYOSHI, SHIGERU. Effects of Long Cosmic Strings on the Anisotropies of the Cosmic Background Radiation. *Tetsuya Hara, Petri Mähönen, & Shigeru Miyoshi*. 414, 421, 176-D3 (1993)
- Large-Scale Peculiar Velocity Field Due to Infinitely Long Cosmic Strings. *Tetsuya Hara, Petri Mähönen, & Shigeru Miyoshi*. 415, 445, 193-D1 (1993)
- MIZUTANI, K. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- MODIGLIANI, A. Winds in Central Stars of Planetary Nebulae. *A. Modigliani, P. Patriarchi, & M. Perinotto*. 415, 258, 188-B12 (1993)
- MONIN, JEAN-LOUIS. Disks around Pre-Main-Sequence Binary Systems: The Case of Haro 6-10. *François Ménard, Jean-Louis Monin, Françoise Angelucci, & Daniel Rouan*. 414, L117, 186-B5 (1993)
- MONTMERLE, THIERRY. ROSAT X-Ray Study of the Chamaeleon I Dark Cloud. I. The Stellar Population. *Eric D. Feigelson, Sophie Casanova, Thierry Montmerle, & Jean Guibert*. 416, 623, 211-B8 (1993)
- MOORE, RONALD L. A Linear Solution for Magnetic Reconnection Driven by Converging or Diverging Footpoint Motions. *George Roumeliotis & Ronald L. Moore*. 416, 386, 205-G7 (1993)
- MOOS, H. W. Detection of [O II] λ 2471 from the Io Plasma Torus. *M. A. McGrath, P. D. Feldman, D. F. Strobel, H. W. Moos, & G. E. Ballester*. 415, L55, 192-D7 (1993)
- MORAN, J. M. The Triple Radio Continuum Source in Serpens: The Birth of a Herbig-Haro System? *S. Curiel, L. F. Rodríguez, J. M. Moran, & J. Canó*. 415, 191, 187-D5 (1993)
- MORAN, JAMES M. Detection of the Angular Expansion Rate and Determination of the Distance of the Planetary Nebula NGC 6302. *Yolanda Gómez, Luis F. Rodríguez, & James M. Moran*. 416, 620, 211-B1 (1993)
- MORRIS, PATRICK. The "Baldwin Effect" in Wolf-Rayet Stars. *Patrick Morris, Peter S. Conti, Henny J. G. L. M. Lamers, & Gloria Koenigsberger*. 414, L25, 175-E7 (1993)
- MORRIS, SIMON L. On the Geometry, Covering Factor, and Scattering-Emission Properties of QSO Broad Absorption-Line Regions. *Fred Hamann, Kirk T. Korista, & Simon L. Morris*. 415, 541, 194-E11 (1993)
- MORSE, JON A. Observations of Entrainment and Time Variability in the HH 47 Jet. *Patrick Hartigan, Jon A. Morse, Steve Heathcote, & Gerald Cecil*. 414, L121, 186-B11 (1993)
- MOULD, J. R. The Faintest Stars: From Schmidt Plates to Luminosity Functions. *C. G. Tinney, J. N. Reid, & J. R. Mould*. 414, 254, 173-B12 (1993)
- The Age of the Large Magellanic Cloud Cluster NGC 1953. *J. R. Mould, D. A. Xystus, G. S. Da Costa, & R. A. Schommer*. 416, 582, 210-E12 (1993)
- MOUSCHOVIAS, TELEMACHOS CH. Ambipolar Diffusion and Star Formation: Formation and Contraction of Axisymmetric Cloud Cores. II. Results. *Robert A. Fiedler & Telemachos Ch. Mouschovias*. 415, 680, 196-C7 (1993)
- MOZURKEWICH, D. The Asymmetric Envelope of γ Cassiopeiae Observed with the Mk III Optical Interferometer. *A. Quirrenbach, C. A. Hummel, D. F. Buscher, J. T. Armstrong, D. Mozurkewich, & N. M. Elias II*. 416, L25, 207-D7 (1993)
- MU, J. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- MÜLLER, EWALD. Structure and Circulation of Self-gravitating Toroids. *Yoshiharu Eriguchi & Ewald Müller*. 416, 666, 211-F6 (1993)
- MUKAI, KOJI. Extreme Ultraviolet Explorer Observations of the Magnetic Cataclysmic Variable RE 1938-461. *John K. Warren, John V. Valleria, Christopher W. Mauche, Koji Mukai, & Oswald H. W. Siegmund*. 414, L69, 185-D2 (1993)
- MULCHAEY, JOHN S. Soft X-Ray Spectra of Seyfert 2 Galaxies. *John S. Mulchaey, Edward Colbert, Andrew S. Wilson, Richard F. Mushotzky, & Kimberly A. Weaver*. 414, 144, 171-G1 (1993)
- MULLAN, D. J. Simulation of Compressible Convection: A Comparative Study of Boundary Conditions. *Murshed Hossain & D. J. Mullan*. 416, 733, 212-E1 (1993)
- MUSHOTZKY, RICHARD F. Soft X-Ray Spectra of Seyfert 2 Galaxies. *John S. Mulchaey, Edward Colbert, Andrew S. Wilson, Richard F. Mushotzky, & Kimberly A. Weaver*. 414, 144, 171-G1 (1993)
- MUTOH, HARUHIKO. Neutrino Energy Loss in Stellar Interiors. V. Recombination Neutrino Process. *Yasuhiro Kohyama, Naoki Itoh, Akihiko Obama, & Haruhiko Mutoh*. 415, 267, 188-C9 (1993)
- NANDRA, K. OSSE Observations of the Bright Seyfert 1 Galaxy IC 4329A. *A. C. Fabian, K. Nandra, A. Celotti, M. J. Rees, J. E. Grove, & W. N. Johnson*. 416, L57, 216-C1 (1993)
- NANJO, H. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- NARAYAN, RAMESH. Boundary Layers in Pre-Main-Sequence Accretion Disks. *Robert Popham, Ramesh Narayan, Lee Hartmann, & Scott Kenyon*. 415, L127, 200-D9 (1993)
- NARAYANAN, GOPAL. The Detection of [C I] in Molecular Outflows Associated with Young Stellar Objects. *Christopher K. Walker, Gopal Narayanan, Thomas H. Büttgenbach, John E. Carlstrom, Jocelyn Keene, & T. G. Phillips*. 415, 672, 196-B10 (1993)
- NAVARRO, J. A Search for Pulsars at High Galactic Latitudes. *S. E. Thorsett, W. T. S. Deich, S. R. Kulkarni, J. Navarro, & G. Vasishth*. 416, 182, 203-C10 (1993)
- NEMIROFF, R. J. Searching Gamma-Ray Bursts for Gravitational Lensing Echoes: Implications for Compact Dark Matter. *R. J. Nemiroff, J. P. Norris, W. A. D. T. Wickramasinghe, J. M. Horack, C. Kouveliotou, G. J. Fishman, C. A. Meegan, R. B. Wilson, & W. S. Paciesas*. 414, 36, 170-E1 (1993)
- NEUGEBAUER, G. The Einsteinian Gravitational Field of the Rigidly Rotating Disk of Dust. *G. Neugebauer & R. Meinel*. 414, L97, 185-G5 (1993)
- NICOTRA, M. A. Large-Scale Structure in Biased Cold Dark Matter Cosmologies. *D. G. Lambas, M. G. Abadi, M. A. Nicotra, & P. B. Tissera*. 414, 30, 170-D6 (1993)
- NIEL, M. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.

- NISHIZAWA, M. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- NOGUCHI, MASAFUMI. Effects of Gas on the Global Stability of Galactic Disks: Radial Flows. *Isaac Shlosman & Masafumi Noguchi*. 414, 474, 177-B2 (1993)
- NOLAN, P. L. Observation of High-Energy Gamma Rays from the Quasi-stellar Object CTA 102. *P. L. Nolan, D. L. Bertsch, C. E. Fichtel, R. C. Hartman, S. D. Hunter, G. Kanbach, D. A. Kniffen, Y. C. Lin, J. R. Mattox, H. A. Mayer-Hasselwander, P. F. Michelson, C. von Montigny, E. Schneid, P. Sreekumar, & D. J. Thompson*. 414, 82, 171-A13 (1993)
- See THOMPSON, D. J., et al. EGRET Observations of Active Galactic Nuclei: 0836+710, 0454-234, 0804+499, 0906+430, 1510-089, and 2356+196.
- See LIN, Y. C., et al. EGRET Limits on High-Energy Gamma-Ray Emission from X-Ray- and Low-Energy Gamma-Ray-selected Seyfert Galaxies.
- NOMOTO, KEN'ICHI. Type II Supernovae from 8-10 M_{\odot} Asymptotic Giant Branch Stars. *Masaaki Hashimoto, Kohichi Iwamoto, & Ken'ichi Nomoto*. 414, L105, 186-A1 (1993)
- NORIEGA-CRESPO, A. Ultraviolet Spectroscopy of Herbig-Haro Objects: Spatial Structure, Spectroscopic Diagnostics, and Variability. *K.-H. Böhm, A. Noriega-Crespo, & J. Solf*. 416, 647, 211-D11 (1993)
- NORRIS, J. P. See NEMIROFF, R. J., et al. Searching Gamma-Ray Bursts for Gravitational Lensing Echoes: Implications for Compact Dark Matter.
- NORRIS, JOHN E. Abundances of Four Ultra-Metal-Deficient Stars. *John E. Norris, Ruth C. Peterson, & Timothy C. Beers*. 415, 797, 197-F13 (1993)
- NORTHROP, THEODORE G. Long-Term Containment of Energetic Particles in Coronal Loops. *Yun-Tung Lau, Theodore G. Northrop, & John M. Finn*. 414, 908, 182-E10 (1993)
- NUSANG. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- OBAMA, AKIHIKO. Neutrino Energy Loss in Stellar Interiors. V. Recombination Neutrino Process. *Yasuharu Kohyama, Naoki Itoh, Akihiko Obama, & Haruhiko Mutoh*. 415, 267, 188-C9 (1993)
- O'CONNELL, ROBERT W. Ultraviolet Photometry of OB Associations in M31. *Jesse K. Hill, Joan E. Isensee, Ralph C. Bohlin, Robert W. O'Connell, Morton S. Roberts, Andrew M. Smith, & Theodore P. Stecher*. 414, L9, 175-C11 (1993)
- O'DONOGHUE, D. See HOLBERG, J. B., et al. Two New Extremely Iron-rich Hot DA White Dwarfs and the Nature of the EUV Opacity.
- OEGERLE, W. The Dynamics of the Galaxy Cluster Abell 2634. *J. Pinkney, G. Rhee, J. O. Burns, J. M. Hill, W. Oegerle, D. Batuski, & P. Hintzen*. 416, 36, 201-E2 (1993)
- OGAWARA, Y. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKO.
- OGURO, A. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- OHNISHI, M. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- OHTA, I. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- OLIVE, KEITH A. Population II ${}^6\text{Li}$ as a Probe of Nucleosynthesis and Stellar Structure and Evolution. *Gary Steigman, Brian D. Fields, Keith A. Olive, David N. Schramm, & Terry P. Walker*. 415, L35, 192-B1 (1993)
- ONELLO, J. S. A Cold H II Region in the Molecular Globule G70.7+1.2. *J. A. Phillips, J. S. Onello, & S. R. Kulkarni*. 415, L143, 200-F8 (1993)
- OPHER, R. Formation of Quasar Clouds by Thermal Instability in the Presence of Alfvén Wave Heating. *D. R. Gonçalves, V. Jatenco-Pereira, & R. Opher*. 414, 57, 170-F12 (1993)
- ORTIZ, P. F. The Crab Nebula's Cosmic-Ray Acceleration Zone Revealed. *P. P. Kronberg, H. Lesch, P. F. Ortiz, & M. F. Bietenholz*. 416, 251, 204-B13 (1993)
- OSTERBROCK, DONALD E. Spectroscopic Study of the CfA Sample of Seyfert Galaxies. *Donald E. Osterbrock & André Martel*. 414, 552, 178-B2 (1993)
- OSTRIKER, JEREMIAH P. A Cosmological Hydrodynamic Code Based on the Total Variation Diminishing Scheme. *Dongsu Ryu, Jeremiah P. Ostriker, Hyesung Kang, & Renyue Cen*. 414, 1, 170-B1 (1993)
- A Hydrodynamic Treatment of the Tilted Cold Dark Matter Cosmological Scenario. *Renyue Cen & Jeremiah P. Ostriker*. 414, 407, 176-C1 (1993)
- A Hydrodynamic Approach to Cosmology: The Primeval Baryon Isocurvature Model. *Renyue Cen, Jeremiah P. Ostriker, & P. J. E. Peebles*. 415, 423, 193-B5 (1993)
- A Hydrodynamic Approach to Cosmology: Nonlinear Effects on Cosmic Backgrounds in the Cold Dark Matter Model. *Roberto Scaramella, Renyue Cen, & Jeremiah P. Ostriker*. 416, 399, 208-B9 (1993)
- OUCHI, T. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- OVERDUIN, J. M. Constraints on Axions from the Extragalactic Background Light. *J. M. Overduin & P. S. Wesson*. 414, 449, 176-F10 (1993)
- PACIESAS, W. S. See NEMIROFF, R. J., et al. Searching Gamma-Ray Bursts for Gravitational Lensing Echoes: Implications for Compact Dark Matter.
- PACZYŃSKI, B. On the Origin of the Eclipsing Pulsar PSR B1718-19 and Its Wind. *R. A. M. J. Wijers & B. Paczyński*. 415, L115, 200-C1 (1993)
- PADIN, S. CO Emission in the Radio-loud Quasar 3C 48. *N. Z. Scoville, S. Padin, D. B. Sanders, B. T. Soifer, & M. S. Yun*. 415, L75, 199-E7 (1993)
- PADOVANI, PAOLO. Stellar Mass Loss in Elliptical Galaxies and the Fueling of Active Galactic Nuclei. *Paolo Padovani & Francesca Matteucci*. 416, 26, 201-D2 (1993)
- PALMER, J. W. Kinematical Evidence for a Rotating, Episodic Jet in the Planetary Nebula Fleming 1. *J. A. Lopez, J. Meaburn, & J. W. Palmer*. 415, L135, 200-E8 (1993)
- PALUMBO, L. J. Magnetically Confined Plasma Columns with Helical Symmetry. *L. J. Palumbo & A. M. Platzeck*. 416, 656, 211-E8 (1993)
- PANAGIA, NINO. See KIRSHNER, ROBERT P., et al. SN 1992A: Ultraviolet and Optical Studies Based on HST, IUE, and CTIO Observations.
- PAPADAKIS, I. X-Ray Variability of Active Galactic Nuclei: A Universal Power Spectrum with Luminosity-dependent Amplitude. *A. Lawrence & I. Papadakis*. 414, L85, 185-F1 (1993)
- PAPALOIZOU, J. C. B. On the Angular Momentum Transport Associated with Convective Eddies in Accretion Disks. *W. Kley, J. C. B. Papaloizou, & D. N. C. Lin*. 416, 679, 211-G7 (1993)
- On the Nonaxisymmetric Convective Instabilities in Accretion Disks. *D. N. C. Lin, J. C. B. Papaloizou, & W. Kley*. 416, 689, 212-A4 (1993)
- PARKER, E. N. Anomalous Resistivity and the Evolution of Magnetic Field Topology. *E. N. Parker*. 414, 389, 174-G5 (1993)
- PARMAR, A. N. The Luminosity Dependence of the X-Ray Spectrum of the Transient 42 Second Pulsar EXO 2030+375. *A. P. Reynolds, A. N. Parmar, & N. E. White*. 414, 302, 173-F9 (1993)
- PARTHASARATHY, M. LS II +34°26 is a Low-Mass Post-Asymptotic Giant Branch B Supergiant and Not a Massive Population I B Star Located near the Outer Edge of the Galaxy. *M. Parthasarathy*. 414, L109, 186-A7 (1993)
- PATRIARCHI, P. Winds in Central Stars of Planetary Nebulae. *A. Modigliani, P. Patriarchi, & M. Perinotto*. 415, 258, 188-B12 (1993)
- PATTEN, BRIAN M. The Evolution of Stellar Coronae: Initial Results from a ROSAT PSPC Observation of IC 2391. *Brian M. Patten & Theodore Simon*. 415, L123, 200-D1 (1993)
- PATTERER, R. J. *Extreme Ultraviolet Explorer* Observations of the RS Canum Venaticorum Systems AR Lacertae and II Pegasi. *R. J.*

- Patterer, P. W. Vedder, P. Jelinsky, A. Brown, & S. Bowyer. 414, L57, 185-B13 (1993)
- PATTERER, ROBERT J. Extreme Ultraviolet Emission from Late-Type Stars: Initial Results from *Extreme Ultraviolet Explorer*. Peter W. Vedder, Robert J. Patterer, Patrick Jelinsky, Alex Brown, & Stuart Bowyer. 414, L61, 185-C5 (1993)
- PAVLOV, G. G. ROSAT High Resolution Imager Observations of PSR 0656+14. S. B. Anderson, F. A. Córdoba, G. G. Pavlov, C. R. Robinson, & R. J. Thompson, Jr. 414, 867, 182-A12 (1993)
- Finite-Velocity Effects on Atoms in Strong Magnetic Fields and Implications for Neutron Star Atmospheres. G. G. Pavlov & P. Mészáros. 416, 752, 212-F8 (1993)
- PEDLAR, ALAN. Star Formation in the Spiral Arms of NGC 4321. II. H I Distribution and Kinematics. Johan H. Knapen, Jordi Cepa, John E. Beckman, M. Soledad del Rio, & Alan Pedlar. 416, 563, 210-D1 (1993)
- PEEBLES, P. J. E. A Hydrodynamic Approach to Cosmology: The Primeval Baryon Isocurvature Model. Renyue Cen, Jeremiah P. Ostriker, & P. J. E. Peebles. 415, 423, 193-B5 (1993)
- PEHL, R. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- PEIMBERT, M. The O^{++}/H^{+} Abundance Ratio in Gaseous Nebulae Derived from Recombination Lines. M. Peimbert, P. J. Storey, & S. Torres-Peimbert. 414, 626, 179-A7 (1993)
- PELLING, R. M. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- PENG, R.-S. Refrigeration of the 18.3 GHz C_3H_2 Transition in Dark Cloud G1.6-0.25. T. B. H. Kuiper, J. B. Whiteoak, R.-S. Peng, W. L. Peters III, & J. E. Reynolds. 416, L33, 207-E7 (1993)
- PENN, M. J. The Source of 5 Minute Period Photospheric Umbral Oscillations. M. J. Penn & B. J. LaBonte. 415, 383, 189-F7 (1993)
- PÉREZ, M. R. Detection of Accreting Gas toward HD 45677: A Newly Recognized, Herbig Be Proto-Planetary System. C. A. Grady, K. S. Bjorkman, D. Shepherd, R. E. Schulte-Ladbeck, M. R. Pérez, D. de Winter, & P. S. Thé. 415, L39, 192-B6 (1993)
- PERINOTTO, M. Winds in Central Stars of Planetary Nebulae. A. Modigliani, P. Patriarchi, & M. Perinotto. 415, 258, 188-B12 (1993)
- PERLEY, RICHARD A. Magnetic Fields in the Hydra A Cluster. Gregory B. Taylor & Richard A. Perley. 416, 554, 210-C3 (1993)
- PERSIC, MASSIMO. Dark Matter Halos in Elliptical Galaxies. Francesco Bertola, Alessandro Pizzella, Massimo Persic, & Paolo Salucci. 416, L45, 216-B1 (1993)
- PETERS, W. L., III. Refrigeration of the 18.3 GHz C_3H_2 Transition in Dark Cloud G1.6-0.25. T. B. H. Kuiper, J. B. Whiteoak, R.-S. Peng, W. L. Peters III, & J. E. Reynolds. 416, L33, 207-E7 (1993)
- PETERSON, BRUCE A. On the Angular Correlation Function of Faint Galaxies. Yuzuru Yoshii, Bruce A. Peterson, & Fumio Takahara. 414, 431, 176-E1 (1993)
- PETERSON, L. E. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- PETERSON, RUTH C. Abundances of Four Ultra-Metal-Deficient Stars. John E. Norris, Ruth C. Peterson, & Timothy C. Beers. 415, 797, 197-F13 (1993)
- PETHICK, C. J. Thomas-Fermi Calculations of Atoms and Matter in Magnetic Neutron Stars: Effects of Higher Landau Bands. Ö. E. Rögnvaldsson, I. Fushiki, E. H. Gudmundsson, C. J. Pethick, & J. Yngvason. 416, 276, 204-E3 (1993)
- PETRE, ROBERT. SN 1978K: An Extraordinary Supernova in the Nearby Galaxy NGC 1313. Stuart Ryder, Lister Staveley-Smith, Michael Dopita, Robert Petre, Edward Colbert, David Malin, & Eric Schlegel. 416, 167, 203-B6 (1993)
- PETROSIAN, VAHÉ. Smoothed Nonparametric Estimation of the Luminosity Function for Flux-limited Samples. David Caditz & Vahé Petrosian. 416, 450, 209-A1 (1993)
- PHILLIPS, J. A. A Cold H II Region in the Molecular Globule G70.7+1.2. J. A. Phillips, J. S. Onello, & S. R. Kulkarni. 415, L143, 200-F8 (1993)
- PHILLIPS, K. J. H. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKOH.
- PHILLIPS, M. M. See KIRSHNER, ROBERT P., et al. SN 1992A: Ultraviolet and Optical Studies Based on HST, IUE, and CTIO Observations.
- PHILLIPS, T. G. The Detection of [C I] in Molecular Outflows Associated with Young Stellar Objects. Christopher K. Walker, Gopal Narayanan, Thomas H. Büttgenbach, John E. Carlstrom, Jocelyn Keene, & T. G. Phillips. 415, 672, 196-B10 (1993)
- Atomic Carbon in the Envelope of IRC +10216. Jocelyn Keene, K. Young, T. G. Phillips, Thomas H. Büttgenbach, & John E. Carlstrom. 415, L131, 200-E1 (1993)
- Detection of the Interstellar NH_2 Radical. Ewine F. van Dishoeck, David J. Jansen, Peter Schilke, & T. G. Phillips. 416, L83, 216-E10 (1993)
- PHILLIPS, THOMAS G. Discovery of Interstellar Water Lines at 437, 439, and 471 GHz: Strong Case for Water Maser Formation behind C-Type Shocks. Gary J. Melnick, Karl M. Menten, Thomas G. Phillips, & Todd Hunter. 416, L37, 207-E13 (1993)
- PHINNEY, E. S. Binary-Single Star Interactions in Globular Clusters. Steinn Sigurdsson & E. S. Phinney. 415, 631, 195-F3 (1993)
- PIAN, E. The Ultraviolet Continua of Blazars: A Reconsideration of IUE Archives. E. Pian & A. Treves. 416, 130, 202-E14 (1993)
- PIKE, C. D. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKOH.
- PINEAU DES FORÊTS, G. Bistability in Dark Cloud Chemistry. J. Le Bourlot, G. Pineau des Forêts, E. Roueff, & P. Schilke. 416, L87, 216-F1 (1993)
- PINKNEY, J. The Dynamics of the Galaxy Cluster Abell 2634. J. Pinkney, G. Rhee, J. O. Burns, J. M. Hill, W. Oegerle, D. Bauski, & P. Hintzen. 416, 36, 201-E2 (1993)
- PINSONNEAULT, M. H. Evidence for a Dispersion in the Lithium Abundances of Extreme Halo Stars. Constantine P. Deliyannis, M. H. Pinsonneault, & Douglas K. Duncan. 414, 740, 180-D10 (1993)
- Lithium in the Hyades. I. New Observations. J. A. Thorburn, L. M. Hobbs, Constantine P. Deliyannis, & M. H. Pinsonneault. 415, 150, 186-G12 (1993)
- PISANI, A. The Shapes of Galaxy Groups. G. Fasano, A. Pisani, R. Vio, & M. Girardi. 416, 546, 210-B8 (1993)
- PISTINNER, S. Continuum Hydrodynamical Equations for Multiphase Astrophysical Flows. S. Pistinner & G. Shaviv. 414, 612, 178-G5 (1993)
- PIZZELLA, ALESSANDRO. Dark Matter Halos in Elliptical Galaxies. Francesco Bertola, Alessandro Pizzella, Massimo Persic, & Paolo Salucci. 416, L45, 216-B1 (1993)
- PLATZECK, A. M. Magnetically Confined Plasma Columns with Helical Symmetry. L. J. Palumbo & A. M. Platzeck. 416, 656, 211-E8 (1993)
- POPHAM, ROBERT. Boundary Layers in Pre-Main-Sequence Accretion Disks. Robert Popham, Ramesh Narayan, Lee Hartmann, & Scott Kenyon. 415, L127, 200-D9 (1993)
- POPOV, D. V. An Analytical Model for the Plateau Stage of Type II Supernovae. D. V. Popov. 414, 712, 180-B3 (1993)
- PRESS, WILLIAM H. Properties of High-Redshift Lyman-Alpha Clouds. I. Statistical Analysis of the Schneider-Schmidt-Gunn Quasars. William H. Press, George B. Rybicki, & Donald P. Schneider. 414, 64, 170-G7 (1993)
- PRIMACK, JOEL. Structure Formation with Cold plus Hot Dark Matter. Anatoly Klypin, Jon Holtzman, Joel Primack, & Enikő Regös. 416, 1, 201-B1 (1993)
- PUDRITZ, RALPH E. ^{13}CO and $C^{18}O$ Maps of N-Body Magnetohydrodynamic Simulations of Dark Clouds. Lars G. Stenholm & Ralph E. Pudritz. 416, 218, 203-F13 (1993)
- PUETTER, R. C. Strong [Fe II] Emission from NGC 1275. Richard J. Rudy, Ross D. Cohen, George S. Rossano, Peter Erwin, R. C. Puetter, Matthew A. Greenhouse, & Charles E. Woodward. 414, 527, 177-F13 (1993)
- PURIĆ, J. Electron Impact Broadening Parameters Predictions from Regularities: Fe I, Fe II, Fe III, Fe IV, C IV, and Si IV. J. Purić, M. H. Miller, & A. Lesage. 416, 825, 213-F7 (1993)
- PYNE, TED. Null Geodesics in Perturbed Spacetimes. Ted Pyne & Mark Birkinshaw. 415, 459, 193-E7 (1993)
- QUASHNOCK, JEAN M. Gamma-Ray Bursts as a Probe of Large-Scale Structure in the Universe. D. Q. Lamb & Jean M. Quashnock. 415, L1, 191-E8 (1993)
- QUIRRENBACH, A. The Asymmetric Envelope of γ Cassiopeiae Observed with the Mk III Optical Interferometer. A. Quirrenbach,

- C. A. Hummel, D. F. Buscher, J. T. Armstrong, D. Mozurkewich, & N. M. Elias II. 416, L25, 207-D7 (1993)
- RADFORD, S. J. E. Molecular Gas Mass and Far-Infrared Emission from Distant Luminous Galaxies. D. Downes, P. M. Solomon, & S. J. E. Radford. 414, L13, 175-D6 (1993)
- RANDALL, C. E. The Disconnection Events of 1986 April 13–18 and the Cessation of Plasma Tail Activity in Comet Halley in 1986 May. Y. Yi, J. C. Brandt, C. E. Randall, & M. Snow. 414, 883, 182-C6 (1993)
- REES, M. J. Gasdynamics of Relativistically Expanding Gamma-Ray Burst Sources: Kinematics, Energetics, Magnetic Fields, and Efficiency. P. Mészáros, P. Laguna, & M. J. Rees. 415, 181, 187-C7 (1993)
- OSSE Observations of the Bright Seyfert 1 Galaxy IC 4329A. A. C. Fabian, K. Nandra, A. Celotti, M. J. Rees, J. E. Grove, & W. N. Johnson. 416, L57, 216-C1 (1993)
- REGŐS, ENIKŐ. Structure Formation with Cold plus Hot Dark Matter. Anatoly Klypin, Jon Holtzman, Joel Primack, & Enikő Regős. 416, 1, 201-B1 (1993)
- REID, I. N. The Faintest Stars: From Schmidt Plates to Luminosity Functions. C. G. Tinney, I. N. Reid, & J. R. Mould. 414, 254, 173-B12 (1993)
- REIPURTH, B. HH 80–81: A Highly Collimated Herbig-Haro Complex Powered by a Massive Young Star. J. Martí, L. F. Rodríguez, & B. Reipurth. 416, 208, 203-F1 (1993)
- REN, J. R. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- REZNIZINI, ALVIO. Transverse Dissections of the Fundamental Planes of Elliptical Galaxies and Clusters of Galaxies. Alvio Reznizini & Luca Ciotti. 416, L49, 216-B6 (1993)
- REYNOLDS, A. P. The Luminosity Dependence of the X-Ray Spectrum of the Transient 42 Second Pulsar EXO 2030+375. A. P. Reynolds, A. N. Parmar, & N. E. White. 414, 302, 173-F9 (1993)
- REYNOLDS, J. E. Refrigeration of the 18.3 GHz C₂H₂ Transition in Dark Cloud G1.6–0.25. T. B. H. Kuiper, J. B. Whiteoak, R.-S. Peng, W. L. Peters III, & J. E. Reynolds. 416, L33, 207-E7 (1993)
- RHEE, G. The Dynamics of the Galaxy Cluster Abell 2634. J. Pinkney, G. Rhee, J. O. Burns, J. M. Hill, W. Oegerle, D. Batuski, & P. Hintzen. 416, 36, 201-E2 (1993)
- RIBEIRO, MARCELO B. On Modeling a Relativistic Hierarchical (Fractal) Cosmology by Tolman's Spacetime. III. Numerical Results. Marcelo B. Ribeiro. 415, 469, 193-F6 (1993)
- RICHARDS, MERCEDES T. Circumstellar Material in TX Ursae Majoris. Geary E. Albright & Mercedes T. Richards. 414, 830, 181-E6 (1993)
- RICHER, JACQUES. Diffusion of Lithium and Beryllium in Evolving, Nonrotating Main-Sequence A and F Stars. Jacques Richer & Georges Michaud. 416, 312, 205-A5 (1993)
- RICHER, MICHAEL G. Bright Planetary Nebulae as Probes of Chemical Evolution. Michael G. Richer. 415, 240, 188-A6 (1993)
- RIEGER, E. Semiempirical Flare Models with Chromospheric Condensation. W. Q. Gan, E. Rieger, & C. Fang. 416, 886, 214-D10 (1993)
- RIEKE, G. H. IRS 16: The Galaxy's Central Wimp? Peter Tambllyn & G. H. Rieke. 414, 573, 178-D1 (1993)
- The Stellar Population in the ρ Ophiuchi Cluster. F. Comeron, G. H. Rieke, A. Burrows, & M. J. Rieke. 416, 185, 203-D1 (1993)
- RIEKE, M. J. The Stellar Population in the ρ Ophiuchi Cluster. F. Comeron, G. H. Rieke, A. Burrows, & M. J. Rieke. 416, 185, 203-D1 (1993)
- RIX, HANS-WALTER. Early-Type Galaxies, Dark Halos, and Gravitational Lensing Statistics. Dan Maoz & Hans-Walter Rix. 416, 425, 208-F1 (1993)
- ROBERTS, B. Do p -Mode Frequency Shifts Suggest a Hotter Chromosphere at Solar Maximum? Rekha Jain & B. Roberts. 414, 898, 182-D12 (1993)
- ROBERTS, D. H. Milliarsecond Polarization Structure of 24 Objects from the Pearson-Readhead Sample of Bright Extragalactic Radio Sources. I. The Images. T. V. Cawthorne, J. F. C. Wardle, D. H. Roberts, D. C. Gabuzda, & L. F. Brown. 416, 496, 209-D11 (1993)
- Milliarsecond Polarization Structure of 24 Objects from the Pearson-Readhead Sample of Bright Extragalactic Radio Sources.
- II. Discussion. T. V. Cawthorne, J. F. C. Wardle, D. H. Roberts, & D. C. Gabuzda. 416, 519, 209-G5 (1993)
- ROBERTS, MORTON S. Ultraviolet Photometry of OB Associations in M31. Jesse K. Hill, Joan E. Isensee, Ralph C. Bohlin, Robert W. O'Connell, Morton S. Roberts, Andrew M. Smith, & Theodore P. Stecher. 414, L9, 175-C11 (1993)
- ROBERTS, WILLIAM W., JR. Analysis of the Distribution of Pitch Angles in Model Galactic Disks: Numerical Methods and Algorithms. William S. Russell & William W., Jr. Roberts. 414, 86, 171-B5 (1993)
- ROBINSON, C. R. ROSAT High Resolution Imager Observations of PSR 0656+14. S. B. Anderson, F. A. Córdova, G. G. Pavlov, C. R. Robinson, & R. J. Thompson, Jr. 414, 867, 182-A12 (1993)
- ROBINSON, R. D. A Search for Proton Beams during Flares on AU Microscopii. R. D. Robinson, K. G. Carpenter, B. E. Woodgate, & S. P. Maran. 414, 872, 182-B5 (1993)
- RODRÍGUEZ, L. F. The Triple Radio Continuum Source in Serpens: The Birth of a Herbig-Haro System? S. Curiel, L. F. Rodríguez, J. M. Moran, & J. Cantó. 415, 191, 187-D5 (1993)
- HH 80–81: A Highly Collimated Herbig-Haro Complex Powered by a Massive Young Star. J. Martí, L. F. Rodríguez, & B. Reipurth. 416, 208, 203-F1 (1993)
- RODRÍGUEZ, LUIS F. Upper Limits to the Detection of Ammonia from Protoplanetary Disks around HL Tauri and L1551-IRS 5. José F. Gómez, José M. Torrelles, Paul T. P. Ho, Luis F. Rodríguez, & Jorge Cantó. 414, 333, 174-B6 (1993)
- Detection of the Angular Expansion Rate and Determination of the Distance of the Planetary Nebula NGC 6302. Yolanda Gómez, Luis F. Rodríguez, & James M. Moran. 416, 620, 211-B1 (1993)
- RÖGNVALDSSON, Ö. E. Thomas-Fermi Calculations of Atoms and Matter in Magnetic Neutron Stars: Effects of Higher Landau Bands. Ö. E. Rognvaldsson, I. Fushiki, E. H. Gudmundsson, C. J. Pethick, & J. Yngvason. 416, 276, 204-E3 (1993)
- ROLFS, C. See DROTTLEFF, H. W., et al. Reaction Rates of the s -Process Neutron Sources $^{22}\text{Ne}(\alpha, n)^{25}\text{Mg}$ and $^{13}\text{C}(\alpha, n)^{16}\text{O}$.
- ROLLI, E. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKOH.
- ROSENSTEEL, G. Self-gravitating Symplectic Systems. G. Rosensteel. 416, 291, 204-F7 (1993)
- ROSNER, R. X-Ray Emission at the Low-Mass End: Results from an Extensive Einstein Observatory Survey. M. Barbera, G. Micela, S. Sciortino, F. R. Harnden, Jr., & R. Rosner. 414, 846, 181-F10 (1993)
- ROSAT X-Ray Detection of ϵ Tauri: Revisiting the Coronal and Transition Region Emission of the Hyades Giants. A. Collura, A. Maggio, G. Micela, S. Sciortino, F. R. Harnden, Jr., & R. Rosner. 416, 204, 203-E8 (1993)
- ROSSANO, GEORGE S. Strong [Fe II] Emission from NGC 1275. Richard J. Rudy, Ross D. Cohen, George S. Rossano, Peter Erwin, R. C. Puetter, Matthew A. Greenhouse, & Charles E. Woodward. 414, 527, 177-F13 (1993)
- ROSSI, P. Radiative Instability in Synchrotron-emitting Plasmas. P. Rossi, G. Bodo, S. Massaglia, & A. Ferrari. 414, 112, 171-D7 (1993)
- ROTH, KATHERINE C. See KIRSHNER, ROBERT P., et al. SN 1992A: Ultraviolet and Optical Studies Based on HST, IUE, and CTIO Observations.
- ROUAN, DANIEL. Disks around Pre-Main-Sequence Binary Systems: The Case of Haro 6-10. François Ménard, Jean-Louis Monin, Françoise Angelucci, & Daniel Rouan. 414, L117, 186-B5 (1993)
- ROUEFF, E. Bistability in Dark Cloud Chemistry. J. Le Bourlot, G. Pineau des Forêts, E. Roueff, & P. Schilke. 416, L87, 216-F1 (1993)
- ROULEAU, FRANÇOIS. A New Method to Calculate the Extinction Properties of Irregularly Shaped Particles. François Rouleau & P. G. Martin. 414, 803, 181-C2 (1993)
- Proximity Effects in Clusters of Particles. François Rouleau & P. G. Martin. 416, 707, 212-B10 (1993)
- ROUMELIOTIS, GEORGE. A Linear Solution for Magnetic Reconnection Driven by Converging or Diverging Footpoint Motions. George Roumeliotis & Ronald L. Moore. 416, 386, 205-G7 (1993)
- RUDERMAN, M. Soft X-Ray Properties of the Geminga Pulsar. J. P. Halpern & M. Ruderman. 415, 286, 188-E8 (1993)

- RUDERMAN, M. A. Formation of Planets around Pulsars. *M. Banit, M. A. Ruderman, J. Shaham, & J. H. Applegate.* 415, 779, 197-E6 (1993)
- RUDY, RICHARD J. Strong [Fe II] Emission from NGC 1275. *Richard J. Rudy, Ross D. Cohen, George S. Rossano, Peter Erwin, R. C. Puetter, Matthew A. Greenhouse, & Charles E. Woodward.* 414, 527, 177-F13 (1993)
- RUFFINI, R. Stability of Dense Stellar Clusters against Relativistic Collapse. *G. S. Bisnovatyi-Kogan, M. Merafina, R. Ruffini, & E. Vesperini.* 414, 187, 172-C13 (1993)
- RUSSELL, WILLIAM S. Analysis of the Distribution of Pitch Angles in Model Galactic Disks: Numerical Methods and Algorithms. *William S. Russell & William W., Jr. Roberts.* 414, 86, 171-B5 (1993)
- RUTTEN, R. J. Dynamics of the Solar Chromosphere. I. Long-Period Network Oscillations. *B. W. Lites, R. J. Rutten, & W. Kalkofen.* 414, 345, 174-C8 (1993)
- RYBICKI, GEORGE B. Properties of High-Redshift Lyman-Alpha Clouds. I. Statistical Analysis of the Schneider-Schmidt-Gunn Quasars. *William H. Press, George B. Rybicki, & Donald P. Schneider.* 414, 64, 170-G7 (1993)
- RYDER, STUART. SN 1978K: An Extraordinary Supernova in the Nearby Galaxy NGC 1313. *Stuart Ryder, Lister Staveley-Smith, Michael Dopita, Robert Petre, Edward Colbert, David Malin, & Eric Schlegel.* 416, 167, 203-B6 (1993)
- RYU, DONGSU. A Cosmological Hydrodynamic Code Based on the Total Variation Diminishing Scheme. *Dongsu Ryu, Jeremiah P. Ostriker, Hyesung Kang, & Renyue Cen.* 414, 1, 170-B1 (1993)
- SACHS, ELISE R. Variable C IV Absorption in the Seyfert Galaxy NGC 5548: A Connection to Broad Absorption Line Quasi-stellar Objects? *J. Michael Shull & Elise R. Sachs.* 416, 536, 210-A10 (1993)
- SACKMANN, I.-JULIANA. Prevention of High-Luminosity Carbon Stars by Hot Bottom Burning. *Arnold I. Boothroyd, I. Juliana Sackmann, & Sean C. Ahern.* 416, 762, 212-G6 (1993)
- SAGAN, CARL. Polycyclic Aromatic Hydrocarbons in the Atmospheres of Titan and Jupiter. *Carl Sagan, B. N. Khare, W. R. Thompson, G. D. McDonald, Michael R. Wing, Jeffrey L. Bada, Tuan Vo-Dinh, & E. T. Arakawa.* 414, 399, 175-A3 (1993)
- FIVE YEARS OF PROJECT META: An All-Sky Narrow-Band Radio Search for Extraterrestrial Signals. *Paul Horowitz & Carl Sagan.* 415, 218, 187-F8 (1993)
- SAHU, PRADIP K. High-Density Matter in the Chiral Sigma Model. *Pradip K. Sahu, Rahul Basu, & Bhaskar Datta.* 416, 267, 204-D6 (1993)
- SAITO, T. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- SAKATA, M. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- SALARIS, MAURIZIO. The α -enhanced Isochrones and Their Impact on the Fits to the Galactic Globular Cluster System. *Maurizio Salaris, Alessandro Chieffi, & Oscar Straniero.* 414, 580, 178-D10 (1993)
- SALECK, A. H. Detection of Interstellar $^{12}\text{C}^{15}\text{N}$. *A. H. Saleck, R. Simon, N. Schneider, & G. Winnewisser.* 414, L133, 186-D3 (1993)
- SALUCCI, PAOLO. Dark Matter Halos in Elliptical Galaxies. *Francesco Bertola, Alessandro Pizzella, Massimo Persic, & Paolo Salucci.* 416, L45, 216-B1 (1993)
- SANDAGE, ALLAN. The Hubble Diagram in V for Supernovae of Type Ia and the Value of H_0 Therefrom. *Allan Sandage & G. A. Tammann.* 415, 1, 185-B1 (1993)
- SANDERS, D. B. CO Emission in the Radio-loud Quasar 3C 48. *N. Z. Scoville, S. Padin, D. B. Sanders, B. T. Soifer, & M. S. Yun.* 415, L75, 199-E7 (1993)
- SARAZIN, CRAIG L. The X-Ray Spectra of Cluster Cooling Flows. I. Optically Thin Models. *Michael W. Wise & Craig L. Sarazin.* 415, 58, 185-F10 (1993)
- Faint Object Spectrograph Spectra of the Broad Fe II Absorption Lines in the Remnant of SN 1006. *Chi-Chao Wu, D. Michael Crenshaw, Robert A. Fesen, Andrew J. S. Hamilton, & Craig L. Sarazin.* 416, 247, 204-B7 (1993)
- SARGENT, ANNEILA I. The Small-Scale Structure and Kinematics of B335. *Claire J. Chandler & Anneila I. Sargent.* 414, L29, 175-E13 (1993)
- SARGENT, WALLACE L. W. Statistics of QSO Broad Emission-Line Profiles. I. The C IV $\lambda 1549$ Line and the $\lambda 1400$ Feature. *Beverly J. Wills, M. S. Brotherton, D. Fang, Charles C. Steidel, & Wallace L. W. Sargent.* 415, 563, 194-G8 (1993)
- SASSEEN, TIMOTHY P. In-Flight Performance and Preliminary Results from the Far Ultraviolet Space Telescope (Faust) Flown on ATLAS-1. *Stuart Bowyer, Timothy P. Sasseen, Michael Lampton, & Xiaoyi Wu.* 415, 875, 198-G12 (1993)
- SAVAGE, BLAIR D. Forbidden Velocity Gas Detected in Ultraviolet Interstellar Absorption toward Four Distant Inner Galaxy Stars. *Todd M. Tripp, Kenneth R. Sembach, & Blair D. Savage.* 415, 652, 196-A1 (1993)
- SCARAMELLA, ROBERTO. A Hydrodynamic Approach to Cosmology: Nonlinear Effects on Cosmic Backgrounds in the Cold Dark Matter Model. *Roberto Scaramella, Renyue Cen, & Jeremiah P. Ostriker.* 416, 399, 208-B9 (1993)
- SCHILKE, P. Bistability in Dark Cloud Chemistry. *J. Le Bourlot, G. Pineau des Forêts, E. Roueff, & P. Schilke.* 416, L87, 216-F1 (1993)
- SCHILKE, PETER. Detection of the Interstellar NH_2 Radical. *Ewine F. van Dishoeck, David J. Jansen, Peter Schilke, & T. G. Phillips.* 416, L83, 216-E10 (1993)
- SCHLEGEL, ERIC. SN 1978K: An Extraordinary Supernova in the Nearby Galaxy NGC 1313. *Stuart Ryder, Lister Staveley-Smith, Michael Dopita, Robert Petre, Edward Colbert, David Malin, & Eric Schlegel.* 416, 167, 203-B6 (1993)
- SCHLICKSEISER, REINHARD. Ion Acceleration in Impulsive Solar Flares. *Jürgen Steinacker, Uwe Jaekel, & Reinhard Schlickeiser.* 415, 342, 189-C1 (1993)
- Model for the High-Energy Emission from Blazars. *Charles D. Dermer & Reinhard Schlickeiser.* 416, 458, 209-A11 (1993)
- SCHMITT, JÜRGEN H. M. M. A Tight Correlation between Radio and X-Ray Luminosities of M Dwarfs. *Manuel Güdel, Jürgen H. M. M. Schmitt, Jay A. Bookbinder, & Thomas A. Fleming.* 415, 236, 188-A1 (1993)
- SCHNEID, E. See NOLAN, P. L., et al. Observation of High-Energy Gamma Rays from the Quasi-stellar Object CTA 102.
- See LIN, Y. C., et al. EGRET Limits on High-Energy Gamma-Ray Emission from X-Ray- and Low-Energy Gamma-Ray-selected Seyfert Galaxies.
- SCHNEID, E. J. See THOMPSON, D. J., et al. EGRET Observations of Active Galactic Nuclei: 0836+710, 0454-234, 0804+499, 0906+430, 1510-089, and 2356+196.
- SCHNEIDER, DONALD P. Properties of High-Redshift Lyman-Alpha Clouds. I. Statistical Analysis of the Schneider-Schmidt-Gunn Quasars. *William H. Press, George B. Rybicki, & Donald P. Schneider.* 414, 64, 170-G7 (1993)
- SCHNEIDER, N. Detection of Interstellar $^{12}\text{C}^{15}\text{N}$. *A. H. Saleck, R. Simon, N. Schneider, & G. Winnewisser.* 414, L133, 186-D3 (1993)
- SCHNEIDER, STEPHEN E. Neutral Hydrogen Absorption and Emission in the Quasar/Galaxy Pair 3C 275.1/NGC 4651. *Stephen E. Schneider & Edvige Corbelli.* 414, 500, 177-D7 (1993)
- SCHOMBERT, JAMES M. Low-Mass Star Formation in Cooling Flow Galaxies. *James M. Schombert, Mary Barsony, & Patricia C. Hanlon.* 416, L61, 216-C7 (1993)
- SCHOMMER, R. A. The Age of the Large Magellanic Cloud Cluster NGC 1953. *J. R. Mould, D. A. Xystus, G. S. Da Costa, & R. A. Schommer.* 416, 582, 210-E12 (1993)
- SCHRAMM, DAVID N. Population II ^6Li as a Probe of Nucleosynthesis and Stellar Structure and Evolution. *Gary Steigman, Brian D. Fields, Keith A. Olive, David N. Schramm, & Terry P. Walker.* 415, L35, 192-B1 (1993)
- SCHULTE-LADBECK, R. E. Detection of Accreting Gas toward HD 45677: A Newly Recognized, Herbig Be Proto-Planetary System. *C. A. Grady, K. S. Bjorkman, D. Shephard, R. E. Schulte-Ladbeck, M. R. Pérez, D. de Winter, & P. S. Thé.* 415, L39, 192-B6 (1993)

- SCHUTTE, W. A. Theoretical Modeling of the Infrared Fluorescence from Interstellar Polycyclic Aromatic Hydrocarbons. *W. A. Schutte, A. G. G. M. Tielens, & L. J. Allamandola.* 415, 397, 189-G12 (1993)
- SCIAMA, D. W. The C^0/CO Ratio Problem: A Possible New Precision Test of the Decaying Neutrino Theory. *D. W. Sciama.* 415, L31, 192-A8 (1993)
- SCIORTINO, S. X-Ray Emission at the Low-Mass End: Results from an Extensive Einstein Observatory Survey. *M. Barbera, G. Micela, S. Sciortino, F. R. Harnden, Jr., & R. Rosner.* 414, 846, 181-F10 (1993)
- ROSAT X-Ray Detection of ϵ Tauri: Revisiting the Coronal and Transition Region Emission of the Hyades Giants. *A. Collura, A. Maggio, G. Micela, S. Sciortino, F. R. Harnden, Jr., & R. Rosner.* 416, 204, 203-E8 (1993)
- SCOVILLE, N. Z. CO Emission in the Radio-loud Quasar 3C 48. *N. Z. Scoville, S. Padin, D. B. Sanders, B. T. Soifer, & M. S. Yun.* 415, L75, 199-E7 (1993)
- SEAGER, S. Goodbye to Polaris the Cepheid. *J. D. Fernie, Karl W. Kamper, & S. Seager.* 416, 820, 213-F1 (1993)
- SEAQUIST, E. R. The Neutral Hydrogen Distribution of NGC 3079: Erratum. *Judith A. Irwin & E. R. Seaquist.* 415, 415, 190-B3 (1993) (Orig. paper in 371, 111, 61-D9 (1991))
- SEMBACH, KENNETH R. Forbidden Velocity Gas Detected in Ultraviolet Interstellar Absorption toward Four Distant Inner Galaxy Stars. *Todd M. Tripp, Kenneth R. Sembach, & Blair D. Savage.* 415, 652, 196-A1 (1993)
- SERLEMITOS, P. J. The Iron K Line as a Probe of Beamed X-Ray Emission in Active Galactic Nuclei. *T. Yaqoob, B. McKernan, C. Done, P. J. Serlemis, & K. A. Weaver.* 416, L5, 207-B7 (1993)
- SHAHAM, J. Formation of Planets around Pulsars. *M. Banit, M. A. Ruderman, J. Shaham, & J. H. Applegate.* 415, 779, 197-E6 (1993)
- SHAPIRO, STUART L. A Hydrodynamical Model for the Explosion of a Neutron Star Just below the Minimum Mass. *Monica Colpi, Stuart L. Shapiro, & Saul A. Teukolsky.* 414, 717, 180-B10 (1993)
- SHARE, G. H. SMM Observations of Gamma-Ray Transients. I. A Search for Variable Emission at MeV Energies from Five Galactic and Extragalactic Sources. *M. J. Harris, G. H. Share, M. D. Leising, & J. E. Grove.* 416, 601, 210-G8 (1993)
- SHAVIV, G. Continuum Hydrodynamical Equations for Multiphase Astrophysical Flows. *S. Pistinner & G. Shaviv.* 414, 612, 178-G5 (1993)
- SHEELEY, N. R., JR. Understanding the Rotation of Coronal Holes. *Y.-M. Wang & N. R. Sheeley, Jr.* 414, 916, 182-F7 (1993)
- SHEPHERD, D. Detection of Accreting Gas toward HD 45677: A Newly Recognized, Herbig Be Proto-Planetary System. *C. A. Grady, K. S. Bjorkman, D. Shepherd, R. E. Schulte-Ladbeck, M. R. Pérez, D. de Winter, & P. S. Thé.* 415, L39, 192-B6 (1993)
- SHI, Z. Z. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- SHIBATA, K. Three-dimensional Magnetohydrodynamics of the Emerging Magnetic Flux in the Solar Atmosphere. *R. Matsumoto, T. Tajima, K. Shibata, & M. Katsig.* 414, 357, 174-D8 (1993)
- SHIBATA, KATSUNORI M. High Spatial Resolution Observations of CO in CRL 618. *Katsunori M. Shibata, Shuji Deguchi, Naomi Hirano, Osamu Kameya, & Shin'ichi Tamura.* 415, 708, 196-F1 (1993)
- SHIBATA, M. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- SHIRAI, T. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- SHLOSMA, ISAAC. Effects of Gas on the Global Stability of Galactic Disks: Radial Flows. *Isaac Shlosman & Masafumi Noguchi.* 414, 474, 177-B2 (1993)
- SHORE, STEVEN N. On the Interpretation of the Ultraviolet Spectra of Symbiotic Stars and Recurrent Novae. I. *Steven N. Shore & Jason P. Aufdenberg.* 416, 355, 205-D10 (1993)
- SHULL, J. MICHAEL. The Two-Point Correlation Function of Randomly Distributed Lyman-Alpha Clouds. *Mark A. Fardal & J. Michael Shull.* 415, 524, 194-D1 (1993)
- Variable C IV Absorption in the Seyfert Galaxy NGC 5548: A Connection to Broad Absorption Line Quasi-stellar Objects? *J. Michael Shull & Elise R. Sachs.* 416, 536, 210-A10 (1993)
- SIEGMUND, OSWALD H. W. Extreme Ultraviolet Explorer Deep Survey Observations of a Large Flare on AU Microscopii. *Scott L. Cully, Oswald H. W. Siegmund, Peter W. Vedder, & John V. Vallerger.* 414, L49, 185-B1 (1993)
- Extreme Ultraviolet Explorer Observations of the Magnetic Cataclysmic Variable RE 1938-461. *John K. Warren, John V. Vallerger, Christopher W. Mauche, Koji Mukai, & Oswald H. W. Siegmund.* 414, L69, 185-D2 (1993)
- SIGURDSSON, STEINN. Genesis of a Planet in Messier 4. *Steinn Sigurdsson.* 415, L43, 192-B13 (1993)
- Binary-Single Star Interactions in Globular Clusters. *Steinn Sigurdsson & E. S. Phinney.* 415, 631, 195-F3 (1993)
- SILBERBERG, REIN. Comparison of Distributed Reacceleration and Leaky-Box Models of Cosmic-Ray Abundances ($3 \leq Z \leq 28$). *John R. Letaw, Rein Silberberg, & C. H. Tsao.* 414, 601, 178-F6 (1993)
- SILLA, ESTANISLAO. Ab Initio Rotational Constants of Isocyanopolynes. *Arturo Amaro, Estanislao Silla, & Iñaki Tuñón.* 415, L151, 200-G8 (1993)
- SIMON, NORMAN R. On Cepheids at Maximum and Minimum Light. *Norman R. Simon, Shashi M. Kanbur, & Dimitri Mihalas.* 414, 310, 173-G5 (1993)
- SIMON, R. Detection of Interstellar $^{12}C^{15}N$. *A. H. Saleck, R. Simon, N. Schneider, & G. Winnewisser.* 414, L133, 186-D3 (1993)
- SIMON, THEODORE. The Evolution of Stellar Coronae: Initial Results from a ROSAT PSPC Observation of IC 2391. *Brian M. Patten & Theodore Simon.* 415, L123, 200-D1 (1993)
- SINGH, P. D. What Is New about the New Comet Yanaka (1988r)? *J. Mayo Greenberg, P. D. Singh, & A. A. de Almeida.* 414, L45, 175-G7 (1993)
- SION, E. M. See HOLBERG, J. B., et al. Two New Extremely Iron-rich Hot DA White Dwarfs and the Nature of the EUV Opacity.
- SLASSI, S. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- SMITH, ANDREW M. Ultraviolet Photometry of OB Associations in M31. *Jesse K. Hill, Joan E. Isensee, Ralph C. Bohlin, Robert W. O'Connell, Morton S. Roberts, Andrew M. Smith, & Theodore P. Stecher.* 414, L9, 175-C11 (1993)
- SMITH, D. M. Compton-backscattered Annihilation Radiation from the Galactic Center Region. *D. M. Smith, R. P. Lin, P. Feffer, S. Slassi, K. Hurley, J. Matteson, H. B. Bowman, R. M. Pelling, M. Briggs, D. Gruber, L. E. Peterson, R. E. Lingenfelter, P. von Ballmoos, I. Malet, M. Niel, G. Vedrenne, P. Durouchoux, P. Wallyn, C. Chapuis, C. Cork, D. Landis, P. Luke, N. Madden, D. Malone, & R. Pehl.* 414, 165, 172-B1 (1993)
- SMITH, PAUL S. First Ultraviolet Spectropolarimetry of Radio-selected BL Lacertae Objects. *Paul S. Smith, Richard G. Allen, & J. R. P. Angel.* 415, L83, 199-F6 (1993)
- SMITH, PETER L. Transition Probabilities for the $3s^2 3p(^2P^o) - 3s 3p^2(^4P)$ Intersystem Lines of Si II. *Anthony G. Calamai, Peter L. Smith, & S. D. Bergeson.* 415, L59, 192-D12 (1993)
- SMITH, R. CHRIS. See KIRSHNER, ROBERT P., et al. SN 1992A: Ultraviolet and Optical Studies Based on HST, IUE, and CTIO Observations.
- SNOW, M. The Disconnection Events of 1986 April 13-18 and the Cessation of Plasma Tail Activity in Comet Halley in 1986 May. *Y. Yi, J. C. Brandt, C. E. Randall, & M. Snow.* 414, 883, 182-C6 (1993)
- SOBOTKA, MICHAL. A High-Resolution Study of Inhomogeneities in Sunspot Umbrae. *Michal Sobotka, José A. Bonet, & Manuel Vázquez.* 415, 832, 198-B13 (1993)
- SOIFER, B. T. CO Emission in the Radio-loud Quasar 3C 48. *N. Z. Scoville, S. Padin, D. B. Sanders, B. T. Soifer, & M. S. Yun.* 415, L75, 199-E7 (1993)
- SOINÉ, M. See DROTLEFF, H. W., et al. Reaction Rates of the s-Process Neutron Sources $^{22}Ne(\alpha, n)^{25}Mg$ and $^{13}C(\alpha, n)^{16}O$.
- SOLEDAD DEL RIO, M. Star Formation in the Spiral Arms of NGC 4321. II. H I Distribution and Kinematics. *Johan H. Knapen, Jordi Cepa,*

- John E. Beckman, M. Soledad del Rio, & Alan Pedlar. 416, 563, 210-D1 (1993)
- SOLF, J. Ultraviolet Spectroscopy of Herbig-Haro Objects: Spatial Structure, Spectroscopic Diagnostics, and Variability. *K.-H. Böhm, A. Noriega-Crespo, & J. Solf.* 416, 647, 211-D11 (1993)
- SOLOMON, P. M. Molecular Gas Mass and Far-Infrared Emission from Distant Luminous Galaxies. *D. Downes, P. M. Solomon, & S. J. E. Radford.* 414, L13, 175-D6 (1993)
- SONNEBORN, GEORGE. See KIRSHNER, ROBERT P., et al. SN 1992A: Ultraviolet and Optical Studies Based on *HST*, *IUE*, and CTIO Observations.
- SOON, W. H. An Interpretation of Cycle Periods of Stellar Chromospheric Activity. *W. H. Soon, S. L. Baliunas, & Q. Zhang.* 414, L33, 175-F6 (1993)
- The Mount Wilson Observatory Metallicity Index, C_{RV} : Comparison with Other Photometric Systems. *W. H. Soon, Q. Zhang, S. L. Baliunas, & R. L. Kurucz.* 416, 787, 213-C1 (1993)
- SORAR, E. Arecibo Observation of B2 0902+343 in the 21 Centimeter Line at Redshift 3.4. *F. H. Briggs, E. Sorar, & A. Taramopoulos.* 415, L99, 200-A2 (1993)
- SPIEGEL, DAVID N. Bending Instabilities in Galaxy Merger Remnants. *Lars Hernquist, Jeremy S. Heyl, & David N. Spergel.* 416, L9, 207-B13 (1993)
- Structure of Merger Remnants. III. Phase-Space Constraints. *Lars Hernquist, David N. Spergel, & Jeremy S. Heyl.* 416, 415, 208-E4 (1993)
- SREDNICKI, MARK. Cosmic Variance of the Three-Point Correlation Function of the Cosmic Microwave Background. *Mark Srednicki.* 416, L1, 207-B1 (1993)
- SREEKUMAR, P. See NOLAN, P. L., et al. Observation of High-Energy Gamma Rays from the Quasi-stellar Object CTA 102.
- See THOMPSON, D. J., et al. EGRET Observations of Active Galactic Nuclei: 0836+710, 0454-234, 0804+499, 0906+430, 1510-089, and 2356+196.
- Diffuse Gamma-Ray Emission in the Galactic Plane from Cosmic-Ray, Matter, and Photon Interactions. *D. L. Bertsch, T. M. Dame, C. E. Fichtel, S. D. Hunter, P. Sreekumar, J. G. Stacy, & P. Thaddeus.* 416, 587, 210-F6 (1993)
- See LIN, Y. C., et al. EGRET Limits on High-Energy Gamma-Ray Emission from X-Ray- and Low-Energy Gamma-Ray-selected Seyfert Galaxies.
- STACY, J. G. Diffuse Gamma-Ray Emission in the Galactic Plane from Cosmic-Ray, Matter, and Photon Interactions. *D. L. Bertsch, T. M. Dame, C. E. Fichtel, S. D. Hunter, P. Sreekumar, J. G. Stacy, & P. Thaddeus.* 416, 587, 210-F6 (1993)
- STANCIL, P. C. The Radiative Association of He^+ and He and H^+ and H . *P. C. Stancil, J. F. Babb, & A. Dalgarno.* 414, 672, 179-E8 (1993)
- STARK, PHILIP B. Are the 1986-1988 Changes in Solar Free-Oscillation Frequency Splitting Significant? *Douglas Gough & Philip B. Stark.* 415, 376, 189-E13 (1993)
- STAVELEY-SMITH, LISTER. SN 1978K: An Extraordinary Supernova in the Nearby Galaxy NGC 1313. *Stuart Ryder, Lister Staveley-Smith, Michael Dopita, Robert Peire, Edward Colbert, David Malin, & Eric Schlegel.* 416, 167, 203-B6 (1993)
- STECHER, THEODORE P. Ultraviolet Photometry of OB Associations in M31. *Jesse K. Hill, Joan E. Isensee, Ralph C. Bohlin, Robert W. O'Connell, Morton S. Roberts, Andrew M. Smith, & Theodore P. Stecher.* 414, L9, 175-C11 (1993)
- STECKER, F. W. New Upper Limits on Intergalactic Infrared Radiation from High-Energy Astrophysics. *F. W. Stecker & O. C. De Jager.* 415, L71, 199-E1 (1993)
- STEIDEL, CHARLES C. Statistics of QSO Broad Emission-Line Profiles. I. The C IV $\lambda 1549$ Line and the $\lambda 1400$ Feature. *Beverly J. Wills, M. S. Brotherton, D. Fang, Charles C. Steidel, & Wallace L. W. Sargent.* 415, 563, 194-G8 (1993)
- STEIGMAN, GARY. Population II ^6Li as a Probe of Nucleosynthesis and Stellar Structure and Evolution. *Gary Steigman, Brian D. Fields, Keith A. Olive, David N. Schramm, & Terry P. Walker.* 415, L35, 192-B1 (1993)
- STEIMAN-CAMERON, THOMAS Y. Kinematical Modeling of Warps in the H I Disks of Galaxies. *Dimiris M. Christodoulou, Joel E. Tohline, & Thomas Y. Steiman-Cameron.* 416, 74, 202-A7 (1993)
- STEINACKER, JÜRGEN. Ion Acceleration in Impulsive Solar Flares. *Jürgen Steinacker, Uwe Jaekel, & Reinhard Schlickeiser.* 415, 342, 189-C1 (1993)
- STEINOLFSON, RICHARD S. Coronal Heating by the Resonant Absorption of Alfvén Waves: Importance of the Global Mode and Scaling Laws. *Richard S. Steinolfson & Joseph M. Davila.* 415, 354, 189-D1 (1993)
- STENHOLM, LARS G. ^{13}CO and C^{18}O Maps of *N*-Body Magnetohydrodynamic Simulations of Dark Clouds. *Lars G. Stenholm & Ralph E. Pudritz.* 416, 218, 203-F13 (1993)
- STĘPIEŃ, K. HR 1362: The Evolved 53 Camelopardalis. *K. Stępień.* 416, 368, 205-E11 (1993)
- STERLING, A. C. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKOH.
- STEVENS, I. R. Ultraviolet Observations of Selective Wind Eclipses in γ Velorum and Evidence for Colliding Winds. *N. St-Louis, A. J. Willis, & I. R. Stevens.* 415, 298, 188-F8 (1993)
- ST-LOUIS, N. Ultraviolet Observations of Selective Wind Eclipses in γ Velorum and Evidence for Colliding Winds. *N. St-Louis, A. J. Willis, & I. R. Stevens.* 415, 298, 188-F8 (1993)
- STONE, R. G. Evaluation of Emission Mechanisms at ω_p . Using *Ulysses* Observations of Type III Bursts. *G. Thejappa, D. Lengyel-Frey, R. G. Stone, & M. L. Goldstein.* 416, 831, 213-G1 (1993)
- STOREY, P. J. The O^{++}/H^+ Abundance Ratio in Gaseous Nebulae Derived from Recombination Lines. *M. Peimbert, P. J. Storey, & S. Torres-Peimbert.* 414, 626, 179-A7 (1993)
- STRANIERO, OSCAR. The α -enhanced Isochrones and Their Impact on the Fits to the Galactic Globular Cluster System. *Maurizio Salaris, Alessandro Chieffi, & Oscar Straniero.* 414, 580, 178-D10 (1993)
- STROBEL, D. F. Detection of [O II] $\lambda 2471$ from the Io Plasma Torus. *M. A. McGrath, P. D. Feldman, D. F. Strobel, H. W. Moos, & G. E. Ballester.* 415, L55, 192-D7 (1993)
- STROM, S. Hubble Space Telescope Images of the Subarcsecond Jet in DG Tauri. *J. Kepner, P. Hartigan, C. Yang, & S. Strom.* 415, L119, 200-C8 (1993)
- STRONG, K. T. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKOH.
- SUGIMOTO, H. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- SUMI, DEAN M. 3C 317: An Amorphous Radio Source in the Cooling Flow Cluster Abell 2052. *Jun-Hui Zhao, Dean M. Sumi, J. O. Burns, & Nebojsa Duric.* 416, 51, 201-F7 (1993)
- SUN, X. X. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- SUNTZEFF, N. B. See KIRSHNER, ROBERT P., et al. SN 1992A: Ultraviolet and Optical Studies Based on *HST*, *IUE*, and CTIO Observations.
- SUTHERLAND, RALPH S. Shock Excitation of the Emission-Line Filaments in Centaurus A. *Ralph S. Sutherland, Geoffrey V. Bicknell, & Michael A. Dopita.* 414, 510, 177-E7 (1993)
- SWESTY, F. D. The QCD Phase Transition and Supernova Core Collapse. *N. A. Gentile, M. B. Aufderheide, G. J. Mathews, F. D. Swesty, & G. M. Fuller.* 414, 701, 180-A3 (1993)
- SZALAY, ALEXANDER S. Amplification of Cluster Correlations: The Effect of Sharp Clipping. *István Szapudi & Alexander S. Szalay.* 414, 493, 177-C12 (1993)
- SZAPUDI, ISTVÁN. Amplification of Cluster Correlations: The Effect of Sharp Clipping. *István Szapudi & Alexander S. Szalay.* 414, 493, 177-C12 (1993)
- SZCZEPANSKI, JAN. Infrared Frequencies and Intensities for Astrophysically Important Polycyclic Aromatic Hydrocarbon Cations. *Jan Szczepanski & Martin Vala.* 414, 646, 179-C4 (1993)
- TAFALLA, M. Shear in the IRAS 3282 Outflow. *M. Tafalla, R. Bachiller, J. Martín-Pintado, & M. C. H. Wright.* 415, L139, 200-F1 (1993)
- TAIRA, K. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- TAJIMA, T. Three-dimensional Magnetohydrodynamics of the Emerging Magnetic Flux in the Solar Atmosphere. *R. Matsumoto, T. Tajima, K. Shibata, & M. Katsig.* 414, 357, 174-D8 (1993)

- TAKAHARA, FUMIO. On the Angular Correlation Function of Faint Galaxies. *Yuzuru Yoshii, Bruce A. Peterson, & Fumio Takahara.* 414, 431, 176-E1 (1993)
- TAMBLYN, PETER. IRS 16: The Galaxy's Central Wimp? *Peter Tambllyn & G. H. Rieke.* 414, 573, 178-D1 (1993)
- TAMMANN, G. A. The Hubble Diagram in V for Supernovae of Type Ia and the Value of H_0 Therefrom. *Allan Sandage & G. A. Tammann.* 415, 1, 185-B1 (1993)
- TAMURA, SHIN'ICHI. High Spatial Resolution Observations of CO in CRL 618. *Katsunori M. Shibata, Shuji Deguchi, Naomi Hirano, Osamu Kameya, & Shin'ichi Tamura.* 415, 708, 196-F1 (1993)
- TAN, Y. H. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- TANG, Z. M. Radio-selected BL Lacertae Objects and Some Correlations. *J. H. Fan, G. Z. Xie, J. J. Li, J. Liu, S. L. Wen, R. R. Huang, Z. M. Tang & Y. J. Wang.* 415, 113, 186-D12 (1993)
- TARAMPOULOS, A. Arecibo Observation of B2 0902+343 in the 21 Centimeter Line at Redshift 3.4. *F. H. Briggs, E. Sorar, & A. Taramopoulos.* 415, L99, 200-A2 (1993)
- TATEYAMA, N. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- TAYLOR, GREGORY B. Magnetic Fields in the Hydra A Cluster. *Gregory B. Taylor & Richard A. Perley.* 416, 554, 210-C3 (1993)
- TELESKO, C. M. The Genesis of Starbursts and Infrared Emission in the Centers of Galaxies. *C. M. Telesco, L. L. Dressel, & R. D. Wolstencroft.* 414, 120, 171-E3 (1993)
- TEREBEY, S. The Contribution of Disks and Envelopes to the Millimeter Continuum Emission from Very Young Low-Mass Stars. *S. Terebey, C. J. Chandler, & P. André.* 414, 759, 180-F6 (1993)
- TEUKOLSKY, SAUL A. A Hydrodynamical Model for the Explosion of a Neutron Star Just below the Minimum Mass. *Monica Colpi, Stuart L. Shapiro, & Saul A. Teukolsky.* 414, 717, 180-B10 (1993)
- THADDEUS, P. Diffuse Gamma-Ray Emission in the Galactic Plane from Cosmic-Ray, Matter, and Photon Interactions. *D. L. Bertsch, T. M. Dame, C. E. Fichtel, S. D. Hunter, P. Sreekumar, J. G. Stacy, & P. Thaddeus.* 416, 587, 210-F6 (1993)
- THÉ, P. S. Detection of Accreting Gas toward HD 45677: A Newly Recognized, Herbig Be Proto-Planetary System. *C. A. Grady, K. S. Bjorkman, D. Shepherd, R. E. Schulte-Ladbeck, M. R. Pérez, D. de Winter, & P. S. Thé.* 415, L39, 192-B6 (1993)
- THEJAPPA, G. Evaluation of Emission Mechanisms at ω_{pe} Using *Ulysses* Observations of Type III Bursts. *G. Thejappa, D. Lengyel-Frey, R. G. Stone, & M. L. Goldstein.* 416, 831, 213-G1 (1993)
- THEODOSIOU, C. E. Ultraviolet Transitions of Low Condensation Temperature Heavy Elements and New Data for Interstellar Arsenic, Selenium, Tellurium, and Lead. *Jason A. Cardelli, S. R. Federman, David L. Lambert, & C. E. Theodosiou.* 416, L41, 207-F5 (1993)
- THOMAS, NICOLAS. Detection of [O III] $\lambda 5007$ Emission from the Io Plasma Torus. *Nicolas Thomas.* 414, L41, 175-G2 (1993)
- THOMPSON, D. J. See NOLAN, P. L., et al. Observation of High-Energy Gamma Rays from the Quasi-stellar Object CTA 102.
- EGRET Observations of Active Galactic Nuclei: 0836+710, 0454-234, 0804+499, 0906+430, 1510-089, and 2356+196. *D. J. Thompson, D. L. Bertsch, B. L. Dingus, C. E. Fichtel, R. C. Hartman, S. D. Hunter, G. Kanbach, D. A. Kniffen, Y. C. Lin, J. R. Mattox, H. A. Mayer-Hasselwander, P. F. Michelson, C. von Montigny, P. L. Nolan, E. J. Schneid, & P. Sreekumar.* 415, L13, 191-F13 (1993)
- See LIN, Y. C., et al. EGRET Limits on High-Energy Gamma-Ray Emission from X-Ray- and Low-Energy Gamma-Ray-selected Seyfert Galaxies.
- THOMPSON, KEITH L. Optical Lines in High-Redshift Quasi-stellar Objects: Balmer Lines, [O III], and Fe II. *Gary J. Hill, Keith L. Thompson, & Richard Elston.* 414, L1, 175-C1 (1993)
- THOMPSON, R. J., JR. ROSAT High Resolution Imager Observations of PSR 0656+14. *S. B. Anderson, F. A. Córdoba, G. G. Pavlov, C. R. Robinson, & R. J. Thompson, Jr.* 414, 867, 182-A12 (1993)
- THOMPSON, W. R. Polycyclic Aromatic Hydrocarbons in the Atmospheres of Titan and Jupiter. *Carl Sagan, B. N. Khare, W. R. Thompson, G. D. McDonald, Michael R. Wing, Jeffrey L. Bada, Tuan Vo-Dinh, & E. T. Arakawa.* 414, 399, 175-A3 (1993)
- THORBURN, J. A. Lithium in the Hyades. I. New Observations. *J. A. Thorburn, L. M. Hobbs, Constantine P. Deliyannis, & M. H. Pinsonneault.* 415, 150, 186-G12 (1993)
- THORSETT, S. E. A Search for Pulsars at High Galactic Latitudes. *S. E. Thorsett, W. T. S. Deich, S. R. Kulkarni, J. Navarro, & G. Vasishth.* 416, 182, 203-C10 (1993)
- TIBET AS γ COLLABORATION, THE. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- TIENS, A. G. G. M. Infrared Spectra of Transition Objects and the Composition and Evolution of Carbon Dust. *R. H. Buss, Jr., A. G. G. M. Tielens, M. Cohen, M. W. Werner, J. D. Bregman, & F. C. Witteborn.* 415, 250, 188-B3 (1993)
- Theoretical Modeling of the Infrared Fluorescence from Interstellar Polycyclic Aromatic Hydrocarbons. *W. A. Schutte, A. G. G. M. Tielens, & L. J. Allamandola.* 415, 397, 189-G12 (1993)
- TIMMERMAN, RALF. Evidence for Hydrated Silicates toward SN 1987A. *Ralf Timmermann & Harold P. Larson.* 415, 820, 198-A13 (1993)
- TINNEY, C. G. The Faintest Stars: From Schmidt Plates to Luminosity Functions. *C. G. Tinney, I. N. Reid, & J. R. Mould.* 414, 254, 173-B12 (1993)
- TINNEY, CHRISTOPHER G. The Faintest Stars: The Luminosity and Mass Functions at the Bottom of the Main Sequence. *Christopher G. Tinney.* 414, 279, 173-D12 (1993)
- TISSERA, P. B. Large-Scale Structure in Biased Cold Dark Matter Cosmologies. *D. G. Lambas, M. G. Abadi, M. A. Nicotra, & P. B. Tissera.* 414, 30, 170-D6 (1993)
- TOHLIN, JOEL E. Kinematical Modeling of Warps in the H I Disks of Galaxies. *Dimitris M. Christodoulou, Joel E. Tohline, & Thomas Y. Steiman-Cameron.* 416, 74, 202-A7 (1993)
- TOKUNAGA, A. T. An IRAS Sample from Co-added Images of L1641. *H. Chen, A. T. Tokunaga, & Y. Fukui.* 416, 235, 204-A4 (1993)
- TOMISAKA, KOHJI. X-Ray Emission from the Starburst Galaxy IC 342. *Joel N. Bregman, Caroline V. Cox, & Kohji Tomisaka.* 415, L79, 199-E13 (1993)
- TONER, C. G. Direct Mapping of Solar Acoustic Power. *C. G. Toner & B. J. LaBonte.* 415, 847, 198-D6 (1993)
- Accurate Measurement of the Geometry for a Full-Disk Solar Image and Estimation of the Observational Point Spread Function. *C. G. Toner & S. M. Jefferies.* 415, 852, 198-E11 (1993)
- TORII, S. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- TORRELLES, JOSÉ M. Upper Limits to the Detection of Ammonia from Protoplanetary Disks around HL Tauri and L1551-IRS 5. *José F. Gómez, José M. Torrelles, Paul T. P. Ho, Luis F. Rodríguez, & Jorge Cantó.* 414, 333, 174-B6 (1993)
- TORRES-PEIMBERT, S. The O⁺⁺/H⁺ Abundance Ratio in Gaseous Nebulae Derived from Recombination Lines. *M. Peimbert, P. J. Storey, & S. Torres-Peimbert.* 414, 626, 179-A7 (1993)
- TRAMMELL, SUSAN R. Spectropolarimetry of SN 1993J in NGC 3031. *Susan R. Trammell, Dean C. Hines, & J. Craig Wheeler.* 414, L21, 175-E2 (1993)
- TRAUTVETTER, H. P. See DROTLEFF, H. W., et al. Reaction Rates of the s-Process Neutron Sources ²²Ne(α, n)²⁵Mg and ¹³C(α, n)¹⁶O.
- TREVES, A. The Ultraviolet Continua of Blazars: A Reconsideration of IUE Archives. *E. Pian & A. Treves.* 416, 130, 202-E14 (1993)
- TREVESE, DARIO. The Lyman-Alpha Forest of PKS 2126-158 at High Resolution. *Emanuele Giallongo, Stefano Cristiani, Adriano Fontana, & Dario Treves.* 416, 137, 202-F10 (1993)
- TRIPP, TODD M. Forbidden Velocity Gas Detected in Ultraviolet Interstellar Absorption toward Four Distant Inner Galaxy Stars. *Todd M. Tripp, Kenneth R. Sembach, & Blair D. Savage.* 415, 652, 196-A1 (1993)
- TSAO, C. H. Comparison of Distributed Reacceleration and Leaky-Box Models of Cosmic-Ray Abundances ($3 \leq Z \leq 28$). *John R. Letaw, Rein Silberberg, & C. H. Tsao.* 414, 601, 178-F6 (1993)
- TSUNETA, S. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKOH.

- TSUNETTA, SAKU. Temperature and Density Structure of the 1991 November 2 Flare Observed by the YOHKO Soft X-Ray Telescope and Hard X-Ray Telescope. *James M. McTiernan, Sharad R. Kane, Jon M. Loran, James R. Lemen, Loren W. Acton, Hirohisa Hara, Saku Tsuneta, & Takeo Kosugi.* 416, L91, 216-F6 (1993)
- TSVETANOV, ZLATAN. *HST* Imaging of Hydrogen-poor Ejecta in Abell 30 and Abell 78: Wind-blown Cometary Structures. *Kazimierz J. Borkowski, J. Patrick Harrington, Zlatan Tsvetanov, & Robin E. S. Clegg.* 415, L47, 192-C4 (1993)
- TUÑÓN, IÑAKI. Ab Initio Rotational Constants of Isocyanopolynes. *Arturo Arnao, Estanislao Silla, & Iñaki Tuñón.* 415, L151, 200-G8 (1993)
- TWEEDY, R. W. See HOLBERG, J. B., et al. Two New Extremely Iron-rich Hot DA White Dwarfs and the Nature of the EUV Opacity.
- UCHIDA, Y. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKO.
- UGLESICH, ROBERT. Formaldehyde Emission in Galaxies. *Willem A. Baan, Aubrey D. Haschick, & Robert Uglesich.* 415, 140, 186-G1 (1993)
- VALA, MARTIN. Infrared Frequencies and Intensities for Astrophysically Important Polycyclic Aromatic Hydrocarbon Cations. *Jan Szczepanski & Martin Vala.* 414, 646, 179-C4 (1993)
- VALLERGA, JOHN V. *Extreme Ultraviolet Explorer* Deep Survey Observations of a Large Flare on AU Microscopii. *Scott L. Cully, Oswald H. W. Siegmund, Peter W. Vedder, & John V. Vallerger.* 414, L49, 185-B1 (1993)
- Intense Extreme Ultraviolet Emission from the B Star ϵ Canis Majoris. *John V. Vallerger, Peter W. Vedder, & Barry Y. Welsh.* 414, L65, 185-C11 (1993)
- Extreme Ultraviolet Explorer* Observations of the Magnetic Cataclysmic Variable RE 1938-461. *John K. Warren, John V. Vallerger, Christopher W. Mauche, Koji Mukai, & Oswald H. W. Siegmund.* 414, L69, 185-D2 (1993)
- VALTAJOJA, E. Structure Function Analysis of High Radio Frequency Variability in the Metsähovi Monitoring Sample of Active Galactic Nuclei. *M. Lainela & E. Valtaoja.* 416, 485, 209-C12 (1993)
- VAN BREUGEL, WIL J. M. Induced Star Formation in a Radio Lobe of 3C 285? *Wil J. M. van Breugel & Arjun Dey.* 414, 563, 178-C3 (1993)
- VAN DISHOECK, EWINE F. Detection of the Interstellar NH_2 Radical. *Ewine F. van Dishoeck, David J. Jansen, Peter Schilke, & T. G. Phillips.* 416, L83, 216-E10 (1993)
- VASISHT, G. A Search for Pulsars at High Galactic Latitudes. *S. E. Thorsett, W. T. S. Deich, S. R. Kulkarni, J. Navarro, & G. Vasisht.* 416, 182, 203-C10 (1993)
- VAUCLAIR, G. See HOLBERG, J. B., et al. Two New Extremely Iron-rich Hot DA White Dwarfs and the Nature of the EUV Opacity.
- VÁZQUEZ, MANUEL. A High-Resolution Study of Inhomogeneities in Sunspot Umbrae. *Michal Sobotka, José A. Bonet, & Manuel Vázquez.* 415, 832, 198-B13 (1993)
- VEDDER, P. W. *Extreme Ultraviolet Explorer* Observations of the RS Canum Venaticorum Systems AR Lacertae and II Pegasi. *R. J. Patterer, P. W. Vedder, P. Jelinsky, A. Brown, & S. Bowyer.* 414, L57, 185-B13 (1993)
- VEDDER, PETER W. *Extreme Ultraviolet Explorer* Deep Survey Observations of a Large Flare on AU Microscopii. *Scott L. Cully, Oswald H. W. Siegmund, Peter W. Vedder, & John V. Vallerger.* 414, L49, 185-B1 (1993)
- Extreme Ultraviolet Emission from Late-Type Stars: Initial Results from *Extreme Ultraviolet Explorer*. *Peter W. Vedder, Robert J. Patterer, Patrick Jelinsky, Alex Brown, & Stuart Bowyer.* 414, L61, 185-C5 (1993)
- Intense Extreme Ultraviolet Emission from the B Star ϵ Canis Majoris. *John V. Vallerger, Peter W. Vedder, & Barry Y. Welsh.* 414, L65, 185-C11 (1993)
- VEDRENNE, G. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- VENN, KIM A. CNO Abundances and the Evolutionary Status of Three A-Type Supergiants. *Kim A. Venn.* 414, 316, 174-A1 (1993)
- VESPERINI, E. Stability of Dense Stellar Clusters against Relativistic Collapse. *G. S. Bisnovatyi-Kogan, M. Merafina, R. Ruffini, & E. Vesperini.* 414, 187, 172-C13 (1993)
- VIEGAS, SUELI M. The Origin of Mg II Absorption-Line Systems of Quasi-stellar Objects. *Ruth Gruenwald & Sueli M. Viegas.* 415, 534, 194-E1 (1993)
- VILLAR-MARTIN, MONTSERRAT. Effects of Internal Dust on the Narrow-Line Region Lyman and Balmer Decrements. *Luc Binette, John Wang, Montserrat Villar-Martin, Peter G. Martin, & Gladis Magris C.* 414, 535, 177-G9 (1993)
- VILLUMSEN, JENS V. The Redshift Space Power Spectrum of Galaxies in a Cold Dark Matter Universe. *Tereasa G. Brainerd & Jens V. Villumsen.* 415, L67, 199-D8 (1993)
- VIO, R. The Shapes of Galaxy Groups. *G. Fasano, A. Pisani, R. Vio, & M. Girardi.* 416, 546, 210-B8 (1993)
- VISHNIAC, ETHAN T. Can Extra Power Explain Periodicity on Large Scales? *Shan Luo & Ethan T. Vishniac.* 415, 450, 193-D9 (1993)
- VO-DINH, TUAN. Polycyclic Aromatic Hydrocarbons in the Atmospheres of Titan and Jupiter. *Carl Sagan, B. N. Khare, W. R. Thompson, G. D. McDonald, Michael R. Wing, Jeffrey L. Bada, Tuan Vo-Dinh, & E. T. Arakawa.* 414, 399, 175-A3 (1993)
- VOGT, NICOLE P. The Rotation Curves of Galaxies at Intermediate Redshift. *Nicole P. Vogt, Terry Herter, Martha P. Haynes, & Stéphane Courteau.* 415, L95, 199-G11 (1993)
- VOIT, G. MARK. Calcium Depletion in Cooling-Flow Nebulae and the Origin of the Line-emitting Gas. *Megan Donahue & G. Mark Voit.* 414, L17, 175-D11 (1993)
- VON BALLMOOS, P. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- VON MONTIGNY, C. See NOLAN, P. L., et al. Observation of High-Energy Gamma Rays from the Quasi-stellar Object CTA 102.
- See THOMPSON, D. J., et al. EGRET Observations of Active Galactic Nuclei: 0836+710, 0454-234, 0804+499, 0906+430, 1510-089, and 2356+196.
- See LIN, Y. C., et al. EGRET Limits on High-Energy Gamma-Ray Emission from X-Ray- and Low-Energy Gamma-Ray-selected Seyfert Galaxies.
- WAGA, I. Decaying Vacuum Flat Cosmological Models: Expressions for Some Observable Quantities and Their Properties. *I. Waga.* 414, 436, 176-E8 (1993)
- WAGNER, R. M. Interpretation of the Early Spectra of SN 1993J in M81. *E. Baron, P. H. Hauschildt, D. Branch, R. M. Wagner, S. J. Austin, A. V. Filippenko, & T. Matheson.* 416, L21, 207-D2 (1993)
- WAGONER, ROBERT V. See KIRSHNER, ROBERT P., et al. SN 1992A: Ultraviolet and Optical Studies Based on *HST*, *IUE*, and *CTIO* Observations.
- WAINSCOT, R. J. Galaxy Number Counts from $K = 10$ to $K = 23$. *J. P. Gardner, L. L. Cowie, & R. J. Wainscot.* 415, L9, 191-F7 (1993)
- WAKKER, BART. Hidden Supernova Remnants in the Large Magellanic Cloud H II Complex N44. *You-Hua Chu, Mordecai-Mark Mac Low, Guillermo Garcia-Segura, Bart Wakker, & Robert C. Kennicutt, Jr.* 414, 213, 172-F2 (1993)
- WALKER, CHRISTOPHER K. The Detection of [C I] in Molecular Outflows Associated with Young Stellar Objects. *Christopher K. Walker, Gopal Narayanan, Thomas H. Büttgenbach, John E. Carlstrom, Jocelyn Keene, & T. G. Phillips.* 415, 672, 196-B10 (1993)
- WALKER, TERRY P. Population II ^6Li as a Probe of Nucleosynthesis and Stellar Structure and Evolution. *Gary Steigman, Brian D. Fields, Keith A. Olive, David N. Schramm, & Terry P. Walker.* 415, L35, 192-B1 (1993)
- WALL, W. F. Kiloparsec-Scale Molecular Gas Excitation in Spiral Galaxies. *W. F. Wall, D. T. Jaffe, F. N. Bash, F. P. Israel, P. R. Maloney, & F. Baas.* 414, 98, 171-C5 (1993)
- WALLYN, P. See SMITH, D. M., et al. Compton-backscattered Annihilation Radiation from the Galactic Center Region.
- How Many Positron Sources in the Galactic Center Region? *P. Wallyn & Ph. Durouchoux.* 414, 178, 172-C2 (1993)
- WANG, BOQI. QSO Heavy-Element Absorption Line Systems and Large Galactic Halos by Satellite Accretion. *Boqi Wang.* 415, 174, 187-B12 (1993)

- WANG, H. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- WANG, J. C. L. A Semi-Analytic Model for Cyclotron Line Formation. *J. C. L. Wang, I. Wasserman, & D. Q. Lamb.* 414, 815, 181-D2 (1993)
- WANG, JOHN. Effects of Internal Dust on the Narrow-Line Region Lyman and Balmer Decrements. *Luc Binette, John Wang, Montserrat Villar-Martin, Peter G. Martin, & Gladis Magris C.* 414, 535, 177-G9 (1993)
- WANG, V. C. A Classical Gamma-Ray Burst Repeater, GBS 0855–007. *V. C. Wang & R. E. Lingenfelter.* 416, L13, 207-C5 (1993)
- WANG, Y. J. Radio-selected BL Lacertae Objects and Some Correlations. *J. H. Fan, G. Z. Xie, J. J. Li, J. Liu, S. L. Wen, R. R. Huang, Z. M. Tang, & Y. J. Wang.* 415, 113, 186-D12 (1993)
- WANG, Y.-M. Understanding the Rotation of Coronal Holes. *Y.-M. Wang & N. R. Sheeley, Jr.* 414, 916, 182-F7 (1993)
- WARD, MARTIN J. Radio and Near-Infrared [Fe II] Emission from Active Galaxies. *Duncan A. Forbes & Martin J. Ward.* 416, 150, 202-G12 (1993)
- WARDLE, J. F. C. Milliarsecond Polarization Structure of 24 Objects from the Pearson-Readhead Sample of Bright Extragalactic Radio Sources. I. The Images. *T. V. Cawthorne, J. F. C. Wardle, D. H. Roberts, D. C. Gabuzda, & L. F. Brown.* 416, 496, 209-D11 (1993)
- Milliarsecond Polarization Structure of 24 Objects from the Pearson-Readhead Sample of Bright Extragalactic Radio Sources. II. Discussion. *T. V. Cawthorne, J. F. C. Wardle, D. H. Roberts, & D. C. Gabuzda.* 416, 519, 209-G5 (1993)
- WARREN, JOHN K. *Extreme Ultraviolet Explorer* Observations of the Magnetic Cataclysmic Variable RE 1938–461. *John K. Warren, John V. Vallerga, Christopher W. Mauche, Koji Mukai, & Oswald H. W. Siegmund.* 414, L69, 185-D2 (1993)
- WASSERMAN, I. A Semi-Analytic Model for Cyclotron Line Formation. *J. C. L. Wang, I. Wasserman, & D. Q. Lamb.* 414, 815, 181-D2 (1993)
- WATANABE, T. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKOH.
- WEAVER, K. A. The Iron K Line as a Probe of Beamed X-Ray Emission in Active Galactic Nuclei. *T. Yaqoob, B. McKernan, C. Done, P. J. Serlemis, & K. A. Weaver.* 416, L5, 207-B7 (1993)
- WEAVER, KIMBERLY A. Soft X-Ray Spectra of Seyfert 2 Galaxies. *John S. Mulchaey, Edward Colbert, Andrew S. Wilson, Richard F. Mushotzky, & Kimberly A. Weaver.* 414, 144, 171-G1 (1993)
- WELSH, BARRY Y. Intense Extreme Ultraviolet Emission from the B Star ϵ Canis Majoris. *John V. Vallerga, Peter W. Vedder, & Barry Y. Welsh.* 414, L65, 185-C11 (1993)
- WEN, C. Z. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- WEN, S. L. Radio-selected BL Lacertae Objects and Some Correlations. *J. H. Fan, G. Z. Xie, J. J. Li, J. Liu, S. L. Wen, R. R. Huang, Z. M. Tang, & Y. J. Wang.* 415, 113, 186-D12 (1993)
- WENTZEL, DONAT G. Electromagnetic Radiation from a Strong DC Electric Field. *Manuel Güdel & Donat G. Wentzel.* 415, 750, 197-B10 (1993)
- WERNER, K. See HOLBERG, J. B., et al. Two New Extremely Iron-rich Hot DA White Dwarfs and the Nature of the EUV Opacity.
- WERNER, KLAUS. Detection of the First Coronal X-Ray Source about a White Dwarf. *Thomas A. Fleming, Klaus Werner, & Martin A. Barstow.* 416, L79, 216-E6 (1993)
- WERNER, M. W. Infrared Spectra of Transition Objects and the Composition and Evolution of Carbon Dust. *R. H. Buss, Jr., A. G. M. Tielens, M. Cohen, M. W. Werner, J. D. Bregman, & F. C. Witteborn.* 415, 250, 188-B3 (1993)
- WESSON, P. S. Constraints on Axions from the Extragalactic Background Light. *J. M. Overduin & P. S. Wesson.* 414, 449, 176-F10 (1993)
- WHEELER, J. CRAIG. Spectropolarimetry of SN 1993J in NGC 3031. *Susan R. Trammell, Dean C. Hines, & J. Craig Wheeler.* 414, L21, 175-E2 (1993)
- See KIRSHNER, ROBERT P., et al. SN 1992A: Ultraviolet and Optical Studies Based on *HST*, *IUE*, and CTIO Observations.
- WHITE, N. E. The Luminosity Dependence of the X-Ray Spectrum of the Transient 42 Second Pulsar EXO 2030+375. *A. P. Reynolds, A. N. Parmar, & N. E. White.* 414, 302, 173-F9 (1993)
- WHITEOAK, J. B. Refrigeration of the 18.3 GHz C_2H_2 Transition in Dark Cloud G1.6–0.25. *T. B. H. Kuiper, J. B. Whiteoak, R.-S. Peng, W. L. Peters III, & J. E. Reynolds.* 416, L33, 207-E7 (1993)
- WHITEOAK, JONATHAN B. Z. Further Observations of the Peculiar Galactic Radio Source G318.9+0.4. *Jonathan B. Z. Whiteoak.* 415, 701, 196-E3 (1993)
- WHITNEY, BARBARA A. The Embedded Young Stars in the Taurus-Auriga Molecular Cloud. II. Models for Scattered Light Images. *Scott J. Kenyon, Barbara A. Whitney, Mercedes Gomez, & Lee Hartmann.* 414, 773, 180-G9 (1993)
- WICKRAMASINGHE, W. A. D. T. See NEMIROFF, R. J., et al. Searching Gamma-Ray Bursts for Gravitational Lensing Echoes: Implications for Compact Dark Matter.
- WIDING, K. G. Elemental Abundances in the Upper Solar Atmosphere of Quiet and Coronal Hole Regions ($T_e \approx 4.3 \times 10^5$ K). *U. Feldman & K. G. Widing.* 414, 381, 174-F9 (1993)
- Nonphotospheric Abundances in a Solar Active Region. *K. G. Widing & U. Feldman.* 416, 392, 206-A1 (1993)
- WIDROW, LAWRENCE M. Using the Schrödinger Equation to Simulate Collisionless Matter. *Lawrence M. Widrow & Nick Kaiser.* 416, L71, 216-D6 (1993)
- WIJERS, R. A. M. J. On the Origin of the Eclipsing Pulsar PSR B1718–19 and Its Wind. *R. A. M. Wijers & B. Paczyński.* 415, L115, 200-C1 (1993)
- WILKES, BELINDA J. The ROSAT Spectrum of 3C 351: A Warm Absorber in an X-Ray-“quiet” Quasar? *Fabrizio Fiore, Martin Elvis, Smita Mathur, Belinda J. Wilkes, & Jonathan C. McDowell.* 415, 129, 186-F1 (1993)
- WILLIS, A. J. Ultraviolet Observations of Selective Wind Eclipses in γ Velorum and Evidence for Colliding Winds. *N. St-Louis, A. J. Willis, & I. R. Stevens.* 415, 298, 188-F8 (1993)
- WILLS, BEVERLEY J. The Highly Polarized Hidden Quasar IRAS 09104+4109: A Double-lobed Radio Source in a Rich Cluster. *Dean C. Hines & Beverley J. Wills.* 415, 82, 186-A10 (1993)
- Statistics of QSO Broad Emission-Line Profiles. I. The C IV $\lambda 1549$ Line and the $\lambda 1400$ Feature. *Beverley J. Wills, M. S. Brotherton, D. Fang, Charles C. Steidel, & Wallace L. W. Sargent.* 415, 563, 194-G8 (1993)
- WILSON, ANDREW S. Soft X-Ray Spectra of Seyfert 2 Galaxies. *John S. Mulchaey, Edward Colbert, Andrew S. Wilson, Richard F. Mushotzky, & Kimberly A. Weaver.* 414, 144, 171-G1 (1993)
- WILSON, J. R. Convection above the Neutrinosphere in Type II Supernovae. *D. S. Miller, J. R. Wilson, & R. W. Mayle.* 415, 278, 188-D12 (1993)
- WILSON, R. B. See NEMIROFF, R. J., et al. Searching Gamma-Ray Bursts for Gravitational Lensing Echoes: Implications for Compact Dark Matter.
- WING, MICHAEL R. Polycyclic Aromatic Hydrocarbons in the Atmospheres of Titan and Jupiter. *Carl Sagan, B. N. Khare, W. R. Thompson, G. D. McDonald, Michael R. Wing, Jeffrey L. Bada, Tuan Vo-Dinh, & E. T. Arakawa.* 414, 399, 175-A3 (1993)
- WINGE, CLAUDIA. See KIRSHNER, ROBERT P., et al. SN 1992A: Ultraviolet and Optical Studies Based on *HST*, *IUE*, and CTIO Observations.
- WINKLER, P. FRANK. See KIRSHNER, ROBERT P., et al. SN 1992A: Ultraviolet and Optical Studies Based on *HST*, *IUE*, and CTIO Observations.
- WINNEWISSER, G. Detection of Interstellar $^{12}C^{15}N$. *A. H. Saleck, R. Simon, N. Schneider, & G. Winnewisser.* 414, L133, 186-D3 (1993)
- WISE, MICHAEL W. The X-Ray Spectra of Cluster Cooling Flows. I. Optically Thin Models. *Michael W. Wise & Craig L. Sarazin.* 415, 58, 185-F10 (1993)
- WITT, ADOLF N. Activation of Extended Red Emission Photoluminescence in Carbon Solids by Exposure to Atomic Hydrogen and UV Radiation. *Douglas G. Furtion & Adolf N. Witt.* 415, L51, 192-D1 (1993)
- WITTEBORN, F. C. Infrared Spectra of Transition Objects and the Composition and Evolution of Carbon Dust. *R. H. Buss, Jr.,*

- A. G. G. M. Tielens, M. Cohen, M. W. Werner, J. D. Bregman, & F. C. Witteborn. 415, 250, 188-B3 (1993)
- WOLF, G. See DROTLEFF, H. W., et al. Reaction Rates of the s-Process Neutron Sources $^{22}\text{Ne}(\alpha, n)^{25}\text{Mg}$ and $^{13}\text{C}(\alpha, n)^{16}\text{O}$.
- WOLFF, CHARLES L. Equidistribution of Energy and Other Quantities in Oscillating Systems. *Charles L. Wolff*. 414, 892, 182-D4 (1993)
- WOLFIRE, MARK G. Molecular Line Emission Models of Herbig-Haro Objects. II. HCO⁺ Emission. *Mark G. Wolfire & Arieh Königl*. 415, 204, 187-E6 (1993)
- WOLSTENCROFT, R. D. The Genesis of Starbursts and Infrared Emission in the Centers of Galaxies. *C. M. Telesco, L. L. Dressel, & R. D. Wolstencroft*. 414, 120, 171-E3 (1993)
- WOODGATE, B. E. A Search for Proton Beams during Flares on AU Microscopii. *R. D. Robinson, K. G. Carpenter, B. E. Woodgate, & S. P. Maran*. 414, 872, 182-B5 (1993)
- WOODWARD, CHARLES E. Strong [Fe II] Emission from NGC 1275. *Richard J. Rudy, Ross D. Cohen, George S. Rossano, Peter Erwin, R. C. Puetter, Matthew A. Greenhouse, & Charles E. Woodward*. 414, 527, 177-F13 (1993)
- WORTHY, GUY. A Method for Quantitative Detection of Hot Horizontal Branches in Early-Type Galaxies. *Guy Worthey*. 415, L91, 199-G6 (1993)
- WRIGHT, E. L. Noncosmological Signal Contributions to the COBE DMR Anisotropy Maps. *C. L. Bennett, G. Hinshaw, A. Banday, A. Kogut, E. L. Wright, K. Loewenstein, & E. S. Cheng*. 414, L76, 185-D13 (1993)
- WRIGHT, M. C. H. Shear in the IRAS 3282 Outflow. *M. Tafalla, R. Bachiller, J. Martín-Pintado, & M. C. H. Wright*. 415, L139, 200-F1 (1993)
- WU, CHI-CHAO. Faint Object Spectrograph Spectra of the Broad Fe II Absorption Lines in the Remnant of SN 1006. *Chi-Chao Wu, D. Michael Crenshaw, Robert A. Fesen, Andrew J. S. Hamilton, & Craig L. Sarazin*. 416, 247, 204-B7 (1993)
- Faint Object Spectrograph Spectra of the UV Emission Lines in NGC 5548: Detection of Strong Narrow Components. *D. Michael Crenshaw, Albert Boggess, & Chi-Chao Wu*. 416, L67, 216-D1 (1993)
- WU, XIAOYI. In-Flight Performance and Preliminary Results from the Far Ultraviolet Space Telescope (Faust) Flown on ATLAS-1. *Stuart Bowyer, Timothy P. Sasseen, Michael Lampton, & Xiaoyi Wu*. 415, 875, 198-G12 (1993)
- WUELSE, J.-P. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKOH.
- XIE, G. Z. Radio-selected BL Lacertae Objects and Some Correlations. *J. H. Fan, G. Z. Xie, J. J. Li, J. Liu, S. L. Wen, R. R. Huang, Z. M. Tang, & Y. J. Wang*. 415, 113, 186-D12 (1993)
- XYSTUS, D. A. The Age of the Large Magellanic Cloud Cluster NGC 1953. *J. R. Mould, D. A. Xystus, G. S. Da Costa, & R. A. Schommer*. 416, 582, 210-E12 (1993)
- YAMAMOTO, Y. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- YANG, C. Hubble Space Telescope Images of the Subarcsecond Jet in DG Tauri. *J. Kepner, P. Hartigan, C. Yang, & S. Strom*. 415, L119, 200-C8 (1993)
- YAO, X. Y. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- YAOQOUB, T. The Iron K Line as a Probe of Beamed X-Ray Emission in Active Galactic Nuclei. *T. Yaqoob, B. McKernan, C. Done, P. J. Serlemius, & K. A. Weaver*. 416, L5, 207-B7 (1993)
- YI, Y. The Disconnection Events of 1986 April 13-18 and the Cessation of Plasma Tail Activity in Comet Halley in 1986 May. *Y. Yi, J. C. Brandt, C. E. Randall, & M. Snow*. 414, 883, 182-C6 (1993)
- YNGVASON, J. Thomas-Fermi Calculations of Atoms and Matter in Magnetic Neutron Stars: Effects of Higher Landau Bands. *Ö. E. Rögnvaldsson, J. Fushiki, E. H. Gudmundsson, C. J. Pethick, & J. Yngvason*. 416, 276, 204-E3 (1993)
- YOSHII, YUZURU. On the Angular Correlation Function of Faint Galaxies. *Yuzuru Yoshii, Bruce A. Peterson, & Fumio Takahara*. 414, 431, 176-E1 (1993)
- YOSHIMORI, M. See DOSCHEK, G. A., et al. The 1992 January 5 Flare at 13.3 UT: Observations from YOHKOH.
- YOUNG, K. Atomic Carbon in the Envelope of IRC +10216. *Jocelyn Keene, K. Young, T. G. Phillips, Thomas H. Büttgenbach, & John E. Carlstrom*. 415, L131, 200-E1 (1993)
- YU, G. C. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- YUAN, P. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- YUDA, T. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- YUN, M. S. CO Emission in the Radio-loud Quasar 3C 48. *N. Z. Scoville, S. Padin, D. B. Sanders, B. T. Soifer, & M. S. Yun*. 415, L75, 199-E7 (1993)
- ZAROUBI, SALEEM. Second-Order Perturbation Theory in an Expanding Universe: Spherical Harmonics Expansion. *Saleem Zaroubi & Yehuda Hoffman*. 414, 20, 170-C8 (1993)
- Gravitational Collapse in an Expanding Universe: Asymptotic Self-similar Solutions. *Saleem Zaroubi & Yehuda Hoffman*. 416, 410, 208-D12 (1993)
- ZDZIARSKI, ANDRZEJ A. Active Galactic Nuclei Make the Cosmic X-Ray Background. *Andrzej A. Zdziarski, Piotr T. Życki, & Julian H. Krolik*. 414, L81, 185-E8 (1993)
- Acceleration Efficiency in Nonthermal Sources and the Soft Gamma Rays from NGC 4151 Observed by OSSE and SIGMA. *Andrzej A. Zdziarski, Alan P. Lightman, & Andrzej Maciołek-Niedźwiecki*. 414, L93, 185-F13 (1993)
- ZENG, J. G. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- ZHANG, C. S. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- ZHANG, H. M. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- ZHANG, L. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- ZHANG, Q. An Interpretation of Cycle Periods of Stellar Chromospheric Activity. *W. H. Soon, S. L. Baliunas, & Q. Zhang*. 414, L33, 175-F6 (1993)
- The Mount Wilson Observatory Metallicity Index, C_{RV} : Comparison with Other Photometric Systems. *W. H. Soon, Q. Zhang, S. L. Baliunas, & R. L. Kurucz*. 416, 787, 213-C1 (1993)
- ZHAO, JUN-HUI. 3C 317: An Amorphous Radio Source in the Cooling Flow Cluster Abell 2052. *Jun-Hui Zhao, Dean M. Sumi, J. O. Burns, & Nebojsa Duric*. 416, 51, 201-F7 (1993)
- ZHASANG. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- ZHAXICIREN. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- ZHENG, WEI. Does a Luminosity-dependent Continuum Shape Cause the Baldwin Effect? *Wei Zheng & Matthew A. Malkan*. 415, 517, 194-C6 (1993)
- ZHOU, W. D. See AMENOMORI, M., et al. Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun.
- ZIRIN, H. The Center-to-Limb Brightness Variation of the Sun at $\lambda = 850$ Microns. *T. S. Bastian, M. W. Ewell, Jr., & H. Zirin*. 415, 364, 189-D13 (1993)
- ZIURYS, L. M. The Millimeter-Wave Spectrum of AlOH. *A. J. Apponi, W. L. Barclay, Jr., & L. M. Ziurys*. 414, L129, 186-C11 (1993)
- ZUCKERMAN, B. Submillimeter Studies of Main-Sequence Stars. *B. Zuckerman & E. E. Becklin*. 414, 793, 181-B4 (1993)
- ŻYCKI, PIOTR T. Active Galactic Nuclei Make the Cosmic X-Ray Background. *Andrzej A. Zdziarski, Piotr T. Życki, & Julian H. Krolik*. 414, L81, 185-E8 (1993)

SUBJECT INDEX

PARTS 1 & 2, VOLUMES 414-416

1993 SEPTEMBER 1 TO OCTOBER 20

ACCELERATION OF PARTICLES

Comparison of Distributed Reacceleration and Leaky-Box Models of Cosmic-Ray Abundances ($3 < Z < 28$). *John R. Letaw, Rein Silberberg, & C. H. Tsao.* 414, 601, 178-F6 (1993)

Focusing of Alfvénic Wave Power in the Context of Gamma-Ray Burst Emissivity. *Marco Fatuzzo & Fulvio Melia.* 414, L89, 185-F7 (1993)

Acceleration Efficiency in Nonthermal Sources and the Soft Gamma Rays from NGC 4151 Observed by OSSE and SIGMA. *Andrzej A. Zdziarski, Alan P. Lightman, & Andrzej Maciolek-Niedzwiecki.* 414, L93, 185-F13 (1993)

Convection above the Neutrinosphere in Type II Supernovae. *D. S. Miller, J. R. Wilson, & R. W. Mayle.* 415, 278, 188-D12 (1993)

Ion Acceleration in Impulsive Solar Flares. *Jürgen Steinacker, Uwe Jaekel, & Reinhard Schlickeiser.* 415, 342, 189-C1 (1993)

Electromagnetic Radiation from a Strong DC Electric Field. *Manuel Güdel & Donat G. Wentzel.* 415, 750, 197-B10 (1993)

The Crab Nebula's Cosmic-Ray Acceleration Zone Revealed. *P. P. Kronberg, H. Lesch, P. F. Ortiz, & M. F. Bietenholz.* 416, 251, 204-B13 (1993)

ACCRETION, ACCRETION DISKS

The Contribution of Disks and Envelopes to the Millimeter Continuum Emission from Very Young Low-Mass Stars. *S. Terebey, C. J. Chandler, & P. André.* 414, 759, 180-F6 (1993)

Circumstellar Material in TX Ursae Majoris. *Geary E. Albright & Mercedes T. Richards.* 414, 830, 181-E6 (1993)

Extreme Ultraviolet Explorer Observations of the Magnetic Cataclysmic Variable RE 1938-461. *John K. Warren, John V. Vallerger, Christopher W. Mauche, Koji Mukai, & Oswald H. W. Siegmund.* 414, L69, 185-D2 (1993)

Detection of Accreting Gas toward HD 45677: A Newly Recognized, Herbig Be Proto-Planetary System. *C. A. Grady, K. S. Bjorkman, D. Shepherd, R. E. Schulte-Ladbeck, M. R. Pérez, D. de Winter, & P. S. Thé.* 415, L39, 192-B6 (1993)

Formation of Planets around Pulsars. *M. Banit, M. A. Ruderman, J. Shaham, & J. H. Applegate.* 415, 779, 197-E6 (1993)

Boundary Layers in Pre-Main-Sequence Accretion Disks. *Robert Popham, Ramesh Narayan, Lee Hartmann, & Scott Kenyon.* 415, L127, 200-D9 (1993)

Compton Backscattered Annihilation Radiation and the Mass of Nova Muscae. *Xin-Min Hua & Richard E. Lingenfelter.* 416, L17, 207-C11 (1993)

Structure and Circulation of Self-gravitating Toroids. *Yoshiharu Eriguchi & Ewald Müller.* 416, 666, 211-F6 (1993)

On the Angular Momentum Transport Associated with Convective Eddies in Accretion Disks. *W. Kley, J. C. B. Papaloizou, & D. N. C. Lin.* 416, 679, 211-G7 (1993)

On the Nonaxisymmetric Convective Instabilities in Accretion Disks. *D. N. C. Lin, J. C. B. Papaloizou, & W. Kley.* 416, 689, 212-A4 (1993)

ARTIFICIAL SATELLITES, SPACE PROBES

In-Flight Performance and Preliminary Results from the Far Ultraviolet Space Telescope (Faust) Flown on ATLAS-1. *Stuart Bowyer, Timothy P. Sasseen, Michael Lampton, & Xiaoyi Wu.* 415, 875, 198-G12 (1993)

ASTROMETRY

Deflection of Light by the Earth. *Andrew Gould.* 414, L37, 175-F11 (1993)

ATOMIC DATA

Oscillator Strengths of the Si II 181 Nanometer Resonance Multiplet. *S. D. Bergeson & J. E. Lawler.* 414, L137, 186-D9 (1993)

Transition Probabilities for the $3s^2 3p^2(^2P^o) - 3s 3p^2(^4P)$ Intersystem Lines of Si II. *Anthony G. Calamai, Peter L. Smith, & S. D. Bergeson.* 415, L59, 192-D12 (1993)

Ultraviolet Transitions of Low Condensation Temperature Heavy Elements and New Data for Interstellar Arsenic, Selenium, Tellurium, and Lead. *Jason A. Cardelli, S. R. Federman, David L. Lambert, & C. E. Theodosiou.* 416, L41, 207-F5 (1993)

Electron Impact Broadening Parameters Predictions from Regularities: Fe I, Fe II, Fe III, Fe IV, C IV, and Si IV. *J. Purić, M. H. Miller, & A. Lesage.* 416, 825, 213-F7 (1993)

ATOMIC PROCESSES

Thomas-Fermi Calculations of Atoms and Matter in Magnetic Neutron Stars: Effects of Higher Landau Bands. *Ö. E. Rögnvaldsson, I. Fushiki, E. H. Gudmundsson, C. J. Pethick, & J. Yngvason.* 416, 276, 204-E3 (1993)

Finite-Velocity Effects on Atoms in Strong Magnetic Fields and Implications for Neutron Star Atmospheres. *G. G. Pavlov & P. Mészáros.* 416, 752, 212-F8 (1993)

BLACK HOLE PHYSICS

The Einsteinian Gravitational Field of the Rigidly Rotating Disk of Dust. *G. Neugebauer & R. Meinel.* 414, L97, 185-G5 (1993)

Compton Backscattered Annihilation Radiation and the Mass of Nova Muscae. *Xin-Min Hua & Richard E. Lingenfelter.* 416, L17, 207-C11 (1993)

CELESTIAL MECHANICS, STELLAR DYNAMICS

Stability of Dense Stellar Clusters against Relativistic Collapse. *G. S. Bisnovatyi-Kogan, M. Merafina, R. Ruffini, & E. Vesperini.* 414, 187, 172-C13 (1993)

An $O(N \log N)$ Integration Scheme for Collisional Stellar Systems. *Stephen L. W. McMillan & Sverre J. Aarseth.* 414, 200, 172-E1 (1993)

Binary-Single Star Interactions in Globular Clusters. *Steinn Sigurdsson & E. S. Phinney.* 415, 631, 195-F3 (1993)

Self-gravitating Symplectic Systems. *G. Rosensteel.* 416, 291, 204-F7 (1993)

COMETS: GENERAL

Do Observations Exclude Gamma-Ray Bursts Originating in the Oort Cloud of Comets? *Eyal Maoz.* 414, 877, 182-B12 (1993)

COMETS: INDIVIDUAL

Name: Halley

The Disconnection Events of 1986 April 13-18 and the Cessation of Plasma Tail Activity in Comet Halley in 1986 May. *Y. Yi, J. C. Brandt, C. E. Randall, & M. Snow.* 414, 883, 182-C6 (1993)

Name: Yanaka 1988r

What Is New about the New Comet Yanaka (1988r)? *J. Mayo Greenberg, P. D. Singh, & A. A. de Almeida.* 414, L45, 175-G7 (1993)

CONVECTION

Convection above the Neutrinosphere in Type II Supernovae. *D. S. Miller, J. R. Wilson, & R. W. Mayle.* 415, 278, 188-D12 (1993)

Turbulent Convection with Overshooting: Reynolds Stress Approach. II. *V. M. Canuto.* 416, 331, 205-B12 (1993)

On the Angular Momentum Transport Associated with Convective Eddies in Accretion Disks. *W. Kley, J. C. B. Papaloizou, & D. N. C. Lin.* 416, 679, 211-G7 (1993)

On the Nonaxisymmetric Convective Instabilities in Accretion Disks. *D. N. C. Lin, J. C. B. Papaloizou, & W. Kley.* 416, 689, 212-A4 (1993)

Simulation of Compressible Convection: A Comparative Study of Boundary Conditions. *Murshed Hossain & D. J. Mullan.* 416, 733, 212-E1 (1993)

COSMIC STRINGS

Effects of Long Cosmic Strings on the Anisotropies of the Cosmic Background Radiation. *Tetsuya Hara, Petri Mähönen, & Shigeru Miyoshi.* 414, 421, 176-D3 (1993)

Large-Scale Peculiar Velocity Field Due to Infinitely Long Cosmic Strings. *Tetsuya Hara, Petri Mähönen, & Shigeru Miyoshi.* 415, 445, 193-D1 (1993)

COSMOLOGY: COSMIC MICROWAVE BACKGROUND

A Hydrodynamic Treatment of the Tilted Cold Dark Matter Cosmological Scenario. *Renyue Cen & Jeremiah P. Ostriker.* 414, 407, 176-C1 (1993)

Effects of Long Cosmic Strings on the Anisotropies of the Cosmic Background Radiation. *Tetsuya Hara, Petri Mähönen, & Shigeru Miyoshi.* 414, 421, 176-D3 (1993)

Noncosmological Signal Contributions to the COBE DMR Anisotropy Maps. *C. L. Bennett, G. Hinshaw, A. Banday, A. Kogut, E. L. Wright, K. Loewenstein, & E. S. Cheng.* 414, L76, 185-D13 (1993)

Null Geodesics in Perturbed Spacetimes. *Ted Pyne & Mark Birkinshaw.* 415, 459, 193-E7 (1993)

Cosmic Variance of the Three-Point Correlation Function of the Cosmic Microwave Background. *Mark Srednicki.* 416, L1, 207-B1 (1993)

A Hydrodynamic Approach to Cosmology: Nonlinear Effects on Cosmic Backgrounds in the Cold Dark Matter Model. *Roberto Scaramella, Renyue Cen, & Jeremiah P. Ostriker.* 416, 399, 208-B9 (1993)

COSMOLOGY: DARK MATTER

Large-Scale Structure in Biased Cold Dark Matter Cosmologies. *D. G. Lambas, M. G. Abadi, M. A. Nicotra, & P. B. Tissera.* 414, 30, 170-D6 (1993)

Searching Gamma-Ray Bursts for Gravitational Lensing Echoes: Implications for Compact Dark Matter. *R. J. Nemiroff, J. P. Norris, W. A. D. T. Wickramasinghe, J. M. Horack, C. Kouveliotou, G. J. Fishman, C. A. Meegan, R. B. Wilson, & W. S. Paciesas.* 414, 36, 170-E1 (1993)

Sharp Edges to Neutral Hydrogen Disks in Galaxies and the Extragalactic Radiation Field. *Philip Maloney.* 414, 41, 170-E8 (1993)

A Hydrodynamic Treatment of the Tilted Cold Dark Matter Cosmological Scenario. *Renyue Cen & Jeremiah P. Ostriker.* 414, 407, 176-C1 (1993)

Constraints on Axions from the Extragalactic Background Light. *J. M. Overduin & P. S. Wesson.* 414, 449, 176-F10 (1993)

The Radial Velocities of Planetary Nebulae in NGC 3379. *Robin Ciardullo, George H. Jacoby, & Herwig B. Dejonghe.* 414, 454, 176-G3 (1993)

Improving the Reconstruction of the Velocity Potential and Primordial Density Fluctuations by Choice of Smoothing Windows. *Adrian L. Melott.* 414, L73, 185-D8 (1993)

The Relation between Velocity Dispersion and Temperature in Clusters: Limiting the Velocity Bias. *Lori M. Lubin & Neta A. Bahcall.* 415, L17, 191-G5 (1993)

A Hydrodynamic Approach to Cosmology: The Primeval Baryon Isocurvature Model. *Renyue Cen, Jeremiah P. Ostriker, & P. J. E. Peebles.* 415, 423, 193-B5 (1993)

Large-Scale Peculiar Velocity Field Due to Infinitely Long Cosmic Strings. *Tetsuya Hara, Petri Mähönen, & Shigeru Miyoshi.* 415, 445, 193-D1 (1993)

Structure Formation with Cold plus Hot Dark Matter. *Anatoly Klypin, Jon Holtzman, Joel Primack, & Enikő Regős.* 416, 1, 201-B1 (1993)

A Hydrodynamic Approach to Cosmology: Nonlinear Effects on Cosmic Backgrounds in the Cold Dark Matter Model. *Roberto Scaramella, Renyue Cen, & Jeremiah P. Ostriker.* 416, 399, 208-B9 (1993)

Early-Type Galaxies, Dark Halos, and Gravitational Lensing Statistics. *Dan Maoz & Hans-Walter Rix.* 416, 425, 208-F1 (1993)

The Complex, Gravitationally Lensed Arc System in the X-Ray-selected Cluster of Galaxies MS 0440+0204. *G. A. Luppino, I. M. Gioia, J. Annis, O. Le Fèvre, & F. Hammer.* 416, 444, 208-G8 (1993)

Dark Matter Halos in Elliptical Galaxies. *Francesco Bertola, Alessandro Pizzella, Massimo Persic, & Paolo Salucci.* 416, L45, 216-B1 (1993)

Transverse Dissections of the Fundamental Planes of Elliptical Galaxies and Clusters of Galaxies. *Alvio Renzini & Luca Ciotti.* 416, L49, 216-B6 (1993)

Using the Schrödinger Equation to Simulate Collisionless Matter. *Lawrence M. Widrow & Nick Kaiser.* 416, L71, 216-D6 (1993)

COSMOLOGY: DIFFUSE RADIATION

Sharp Edges to Neutral Hydrogen Disks in Galaxies and the Extragalactic Radiation Field. *Philip Maloney.* 414, 41, 170-E8 (1993)

Constraints on Axions from the Extragalactic Background Light. *J. M. Overduin & P. S. Wesson.* 414, 449, 176-F10 (1993)

Noncosmological Signal Contributions to the COBE DMR Anisotropy Maps. *C. L. Bennett, G. Hinshaw, A. Banday, A. Kogut, E. L. Wright, K. Loewenstein, & E. S. Cheng.* 414, L76, 185-D13 (1993)

Active Galactic Nuclei Make the Cosmic X-Ray Background. *Andrzej A. Zdziarski, Piotr T. Zycki, & Julian H. Krolik.* 414, L81, 185-E8 (1993)

A Hydrodynamic Approach to Cosmology: Nonlinear Effects on Cosmic Backgrounds in the Cold Dark Matter Model. *Roberto Scaramella, Renyue Cen, & Jeremiah P. Ostriker.* 416, 399, 208-B9 (1993)

Diffuse Gamma-Ray Emission in the Galactic Plane from Cosmic-Ray, Matter, and Photon Interactions. *D. L. Bertsch, T. M. Dame, C. E. Fichtel, S. D. Hunter, P. Sreekumar, J. G. Stacy, & P. Thaddeus.* 416, 587, 210-F6 (1993)

COSMOLOGY: DISTANCE SCALE

The Planetary Nebula System and Dynamics of NGC 5128. I. Planetary Nebulae as Standard Candles. *Xiaohui Hui, Holland C. Ford, Robin Ciardullo, & George H. Jacoby.* 414, 463, 177-A1 (1993)

The Hubble Diagram in V for Supernovae of Type Ia and the Value of H_0 Therefrom. *Allan Sandage & G. A. Tammann.* 415, 1, 185-B1 (1993)

The Extragalactic Distance Scale. VIII. A Comparison of Distance Scales. *G. de Vaucouleurs.* 415, 10, 185-B12 (1993)

Specific Frequencies of Globular Clusters in Elliptical Galaxies: A New Test of the Extragalactic Distance Scale. *G. de Vaucouleurs.* 415, 33, 185-D9 (1993)

Planetary Nebulae as Standard Candles. IX. The Distance to the Fornax Cluster. *Russet McMillan, Robin Ciardullo, & George H. Jacoby.* 416, 62, 201-G7 (1993)

COSMOLOGY: GRAVITATIONAL LENSING

Searching Gamma-Ray Bursts for Gravitational Lensing Echoes: Implications for Compact Dark Matter. *R. J. Nemiroff, J. P. Norris, W. A. D. T. Wickramasinghe, J. M. Horack, C. Kouveliotou, G. J. Fishman, C. A. Meegan, R. B. Wilson, & W. S. Paciesas.* 414, 36, 170-E1 (1993)

Is the BL Lacertae Object AO 0235+164 Being Lensed by Its Intervening Mg II Absorber? *Roberto G. Abraham, Carolin S. Crawford, Michael R. Merrifield, John B. Hutchings, & Ian M. McHardy.* 415, 101, 186-C5 (1993)

Null Geodesics in Perturbed Spacetimes. *Ted Pyne & Mark Birkinshaw.* 415, 459, 193-E7 (1993)

Early-Type Galaxies, Dark Halos, and Gravitational Lensing Statistics. *Dan Maoz & Hans-Walter Rix.* 416, 425, 208-F1 (1993)

The Complex, Gravitationally Lensed Arc System in the X-Ray-selected Cluster of Galaxies MS 0440+0204. *G. A. Luppino, I. M. Gioia, J. Annis, O. Le Fèvre, & F. Hammer.* 416, 444, 208-G8 (1993)

COSMOLOGY: LARGE-SCALE STRUCTURE OF UNIVERSE

Second-Order Perturbation Theory in an Expanding Universe: Spherical Harmonics Expansion. *Saleem Zaroubi & Yehuda Hoffman.* 414, 20, 170-C8 (1993)

Large-Scale Structure in Biased Cold Dark Matter Cosmologies. *D. G. Lambas, M. G. Abadi, M. A. Nicotra, & P. B. Tissera.* 414, 30, 170-D6 (1993)

A Hydrodynamic Treatment of the Tilted Cold Dark Matter Cosmological Scenario. *Renyue Cen & Jeremiah P. Ostriker.* 414, 407, 176-C1 (1993)

Improving the Reconstruction of the Velocity Potential and Primordial Density Fluctuations by Choice of Smoothing Windows. *Adrian L. Melott.* 414, L73, 185-D8 (1993)

Gamma-Ray Bursts as a Probe of Large-Scale Structure in the Universe. *D. Q. Lamb & Jean M. Quashnock.* 415, L1, 191-E8 (1993)

Constrained Realizations of Gaussian Fields: Reconstruction of the Large-Scale Structure. *Galit Gilon & Yehuda Hoffman.* 415, L5, 191-F1 (1993)

- A Hydrodynamic Approach to Cosmology: The Primeval Baryon Isocurvature Model. *Renyue Cen, Jeremiah P. Ostriker, & P. J. E. Peebles*. 415, 423, 193-B5 (1993)
- Large-Scale Peculiar Velocity Field Due to Infinitely Long Cosmic Strings. *Tetsuya Hara, Petri Mähönen, & Shigeru Miyoshi*. 415, 445, 193-D1 (1993)
- Can Extra Power Explain Periodicity on Large Scales? *Shan Luo & Ethan T. Vishniac*. 415, 450, 193-D9 (1993)
- The Redshift Space Power Spectrum of Galaxies in a Cold Dark Matter Universe. *Tereasa G. Brainerd & Jens V. Villumsen*. 415, L67, 199-D8 (1993)
- Structure Formation with Cold plus Hot Dark Matter. *Anatoly Klypin, Jon Holtzman, Joel Primack, & Enikő Regős*. 416, 1, 201-B1 (1993)
- A Hydrodynamic Approach to Cosmology: Nonlinear Effects on Cosmic Backgrounds in the Cold Dark Matter Model. *Roberto Scaramella, Renyue Cen, & Jeremiah P. Ostriker*. 416, 399, 208-B9 (1993)
- Gravitational Collapse in an Expanding Universe: Asymptotic Self-similar Solutions. *Saleem Zaroubi & Yehuda Hoffman*. 416, 410, 208-D12 (1993)
- COSMOLOGY: MISCELLANEOUS**
- Focusing of Alfvénic Wave Power in the Context of Gamma-Ray Burst Emissivity. *Marco Fatuzzo & Fulvio Melia*. 414, L89, 185-F7 (1993)
- COSMOLOGY: OBSERVATIONS**
- On the Angular Correlation Function of Faint Galaxies. *Yuzuru Yoshii, Bruce A. Peterson, & Fumio Takahara*. 414, 431, 176-E1 (1993)
- On Cosmological Constraints from Statistics of X-Ray Clusters. *Hitoshi Hanami*. 415, 42, 185-E6 (1993)
- Galaxy Number Counts from $K = 10$ to $K = 23$. *J. P. Gardner, L. L. Cowie, & R. J. Wainscoat*. 415, L9, 191-F7 (1993)
- Counter-Evolution of Faint Field Galaxies. *David C. Koo, Caryl Gronwall, & Gustavo Bruzual A.* 415, L21, 191-G10 (1993)
- Arecibo Observation of B2 0902+343 in the 21 Centimeter Line at Redshift 3.4. *F. H. Briggs, E. Sorar, & A. Taramopoulos*. 415, L99, 200-A2 (1993)
- COSMOLOGY: THEORY**
- A Cosmological Hydrodynamic Code Based on the Total Variation Diminishing Scheme. *Dongsu Ryu, Jeremiah P. Ostriker, Hyesung Kang, & Renyue Cen*. 414, 1, 170-B1 (1993)
- Second-Order Perturbation Theory in an Expanding Universe: Spherical Harmonics Expansion. *Saleem Zaroubi & Yehuda Hoffman*. 414, 20, 170-C8 (1993)
- A Hydrodynamic Treatment of the Tilted Cold Dark Matter Cosmological Scenario. *Renyue Cen & Jeremiah P. Ostriker*. 414, 407, 176-C1 (1993)
- Effects of Long Cosmic Strings on the Anisotropies of the Cosmic Background Radiation. *Tetsuya Hara, Petri Mähönen, & Shigeru Miyoshi*. 414, 421, 176-D3 (1993)
- On the Angular Correlation Function of Faint Galaxies. *Yuzuru Yoshii, Bruce A. Peterson, & Fumio Takahara*. 414, 431, 176-E1 (1993)
- Decaying Vacuum Flat Cosmological Models: Expressions for Some Observable Quantities and Their Properties. *I. Waga*. 414, 436, 176-E8 (1993)
- Constraints on Axions from the Extragalactic Background Light. *J. M. Overduin & P. S. Wesson*. 414, 449, 176-F10 (1993)
- Improving the Reconstruction of the Velocity Potential and Primordial Density Fluctuations by Choice of Smoothing Windows. *Adrian L. Melot*. 414, L73, 185-D8 (1993)
- Gamma-Ray Bursts as a Probe of Large-Scale Structure in the Universe. *D. Q. Lamb & Jean M. Quashnock*. 415, L1, 191-E8 (1993)
- A Hydrodynamic Approach to Cosmology: The Primeval Baryon Isocurvature Model. *Renyue Cen, Jeremiah P. Ostriker, & P. J. E. Peebles*. 415, 423, 193-B5 (1993)
- Large-Scale Peculiar Velocity Field Due to Infinitely Long Cosmic Strings. *Tetsuya Hara, Petri Mähönen, & Shigeru Miyoshi*. 415, 445, 193-D1 (1993)
- On Modeling a Relativistic Hierarchical (Fractal) Cosmology by Tolman's Spacetime. III. Numerical Results. *Marcelo B. Ribeiro*. 415, 469, 193-F6 (1993)
- Evolution of Ideal-Fluid Cosmological Perturbations. *Jai-chan Hwang*. 415, 486, 193-G12 (1993)
- Prerecombination Cloud Collapse and Baryonic Dark Matter. *Craig J. Hogan*. 415, L63, 199-D1 (1993)
- The Redshift Space Power Spectrum of Galaxies in a Cold Dark Matter Universe. *Tereasa G. Brainerd & Jens V. Villumsen*. 415, L67, 199-D8 (1993)
- Structure Formation with Cold plus Hot Dark Matter. *Anatoly Klypin, Jon Holtzman, Joel Primack, & Enikő Regős*. 416, 1, 201-B1 (1993)
- Cosmic Variance of the Three-Point Correlation Function of the Cosmic Microwave Background. *Mark Srednicki*. 416, L1, 207-B1 (1993)
- Gravitational Collapse in an Expanding Universe: Asymptotic Self-similar Solutions. *Saleem Zaroubi & Yehuda Hoffman*. 416, 410, 208-D12 (1993)
- Structure of Merger Remnants. III. Phase-Space Constraints. *Lars Hernquist, David N. Spergel, & Jeremy S. Heyl*. 416, 415, 208-E4 (1993)
- DENSE MATTER**
- Quantum Effects in Dense Coulombic Matter: Application to the Cooling of White Dwarfs. *Gilles Chabrier*. 414, 695, 179-G9 (1993)
- Vortex Pinning by Quenched Randomness in Neutron Stars. *Eric Chevalier*. 414, L113, 186-A13 (1993)
- Neutrino Emission from the Bubble Phase of Stellar Nuclear Matter. *L. B. Leinson*. 415, 759, 197-C8 (1993)
- High-Density Matter in the Chiral Sigma Model. *Pradip K. Sahu, Rahul Basu, & Bhaskar Datta*. 416, 267, 204-D6 (1993)
- Thomas-Fermi Calculations of Atoms and Matter in Magnetic Neutron Stars: Effects of Higher Landau Bands. *Ö. E. Rögnvaldsson, I. Fushiki, E. H. Gudmundsson, C. J. Pethick, & J. Yngvason*. 416, 276, 204-E3 (1993)
- DIFFUSION**
- Ambipolar Diffusion and Star Formation: Formation and Contraction of Axisymmetric Cloud Cores. II. Results. *Robert A. Fiedler & Telemachos Ch. Mouschovias*. 415, 680, 196-C7 (1993)
- Diffusion of Lithium and Beryllium in Evolving, Nonrotating Main-Sequence A and F Stars. *Jacques Richer & Georges Michaud*. 416, 312, 205-A5 (1993)
- EARTH**
- Anomalous Resistivity and the Evolution of Magnetic Field Topology. *E. N. Parker*. 414, 389, 174-G5 (1993)
- ELEMENTARY PARTICLES**
- How Many Positron Sources in the Galactic Center Region? *P. Wallyn & Ph. Durouchoux*. 414, 178, 172-C2 (1993)
- Constraints on Axions from the Extragalactic Background Light. *J. M. Overduin & P. S. Wesson*. 414, 449, 176-F10 (1993)
- Neutrino Energy Loss in Stellar Interiors. V. Recombination Neutrino Process. *Yasuharu Kohyama, Naoki Itoh, Akihiko Obama, & Haruhiko Mutoh*. 415, 267, 188-C9 (1993)
- The C^0/CO Ratio Problem: A Possible New Precision Test of the Decaying Neutrino Theory. *D. W. Sciama*. 415, L31, 192-A8 (1993)
- A Hydrodynamic Approach to Cosmology: The Primeval Baryon Isocurvature Model. *Renyue Cen, Jeremiah P. Ostriker, & P. J. E. Peebles*. 415, 423, 193-B5 (1993)
- Neutrino Emission from the Bubble Phase of Stellar Nuclear Matter. *L. B. Leinson*. 415, 759, 197-C8 (1993)
- EQUATION OF STATE**
- Quantum Effects in Dense Coulombic Matter: Application to the Cooling of White Dwarfs. *Gilles Chabrier*. 414, 695, 179-G9 (1993)
- High-Density Matter in the Chiral Sigma Model. *Pradip K. Sahu, Rahul Basu, & Bhaskar Datta*. 416, 267, 204-D6 (1993)
- Thomas-Fermi Calculations of Atoms and Matter in Magnetic Neutron Stars: Effects of Higher Landau Bands. *Ö. E. Rögnvaldsson, I. Fushiki, E. H. Gudmundsson, C. J. Pethick, & J. Yngvason*. 416, 276, 204-E3 (1993)
- ERRATA, ADDENDA**
- The Neutral Hydrogen Distribution of NGC 3079: Erratum. *Judith A. Irwin & E. R. Seaquist*. 415, 415, 190-B3 (1993) (Orig. paper in 371, 111, 61-D9 (1991))

EXTRATERRESTRIAL INTELLIGENCE

Five Years of Project META: An All-Sky Narrow-Band Radio Search for Extraterrestrial Signals. *Paul Horowitz & Carl Sagan.* 415, 218, 187-F8 (1993)

GALAXIES: ABUNDANCES

On ^{26}Al and Other Short-lived Interstellar Radioactivity. *Donald D. Clayton, Dieter H. Hartmann, & Mark D. Leising.* 415, L25, 192-A1 (1993)

Population II ^6Li as a Probe of Nucleosynthesis and Stellar Structure and Evolution. *Gary Steigman, Brian D. Fields, Keith A. Olive, David N. Schramm, & Terry P. Walker.* 415, L35, 192-B1 (1993)

GALAXIES: ACTIVE

The "Baldwin Effect" in Wolf-Rayet Stars. *Patrick Morris, Peter S. Conti, Henny J. G. L. M. Lamers, & Gloria Koenigsberger.* 414, L25, 175-E7 (1993)

Active Galactic Nuclei Make the Cosmic X-Ray Background. *Andrzej A. Zdziarski, Piotr T. Życki, & Julian H. Krolik.* 414, L81, 185-E8 (1993)

The Highly Polarized Hidden Quasar IRAS 09104+4109: A Double-lobed Radio Source in a Rich Cluster. *Dean C. Hines & Beverley J. Wills.* 415, 82, 186-A10 (1993)

Polarization Changes of Radiation through Stimulated Raman Scattering. *R. T. Gangadhara & V. Krishan.* 415, 505, 194-B6 (1993)

Lyman-Alpha Emission from Galaxies. *Stéphane Charlot & S. Michael Fall.* 415, 580, 195-A13 (1993)

CO Emission in the Radio-loud Quasar 3C 48. *N. Z. Scoville, S. Padin, D. B. Sanders, B. T. Soifer, & M. S. Yun.* 415, L75, 199-E7 (1993)

Stellar Mass Loss in Elliptical Galaxies and the Fueling of Active Galactic Nuclei. *Paolo Padovani & Francesca Matteucci.* 416, 26, 201-D2 (1993)

Radio and Near-Infrared [Fe II] Emission from Active Galaxies. *Duncan A. Forbes & Martin J. Ward.* 416, 150, 202-G12 (1993)

Model for the High-Energy Emission from Blazars. *Charles D. Dermer & Reinhard Schlickeiser.* 416, 458, 209-A11 (1993)

Structure Function Analysis of High Radio Frequency Variability in the Metsähovi Monitoring Sample of Active Galactic Nuclei. *M. Lainela & E. Valtaoja.* 416, 485, 209-C12 (1993)

GALAXIES: BL LACERTAE OBJECTS: GENERAL

Radio-selected BL Lacertae Objects and Some Correlations. *J. H. Fan, G. Z. Xie, J. J. Li, J. Liu, S. L. Wen, R. R. Huang, Z. M. Tang, & Y. J. Wang.* 415, 113, 186-D12 (1993)

Unified Model for X-Ray- and Radio-selected BL Lacertae Objects. *A. Celotti, L. Maraschi, G. Ghisellini, A. Caccianiga, & T. Maccacaro.* 416, 118, 202-D13 (1993)

The Ultraviolet Continua of Blazars: A Reconsideration of IUE Archives. *E. Pian & A. Treves.* 416, 130, 202-E14 (1993)

Structure Function Analysis of High Radio Frequency Variability in the Metsähovi Monitoring Sample of Active Galactic Nuclei. *M. Lainela & E. Valtaoja.* 416, 485, 209-C12 (1993)

Milliarcsecond Polarization Structure of 24 Objects from the Pearson-Readhead Sample of Bright Extragalactic Radio Sources. I. The Images. *T. V. Cawthorne, J. F. C. Wardle, D. H. Roberts, D. C. Gabuzda, & L. F. Brown.* 416, 496, 209-D11 (1993)

Milliarcsecond Polarization Structure of 24 Objects from the Pearson-Readhead Sample of Bright Extragalactic Radio Sources. II. Discussion. *T. V. Cawthorne, J. F. C. Wardle, D. H. Roberts, & D. C. Gabuzda.* 416, 519, 209-G5 (1993)

GALAXIES: BL LACERTAE OBJECTS: INDIVIDUAL

Alphanumeric: 0754+100

First Ultraviolet Spectropolarimetry of Radio-selected BL Lacertae Objects. *Paul S. Smith, Richard G. Allen, & J. R. P. Angel.* 415, L83, 199-F6 (1993)

Alphanumeric: AO 0235+164

Is the BL Lacertae Object AO 0235+164 Being Lensed by Its Intervening Mg II Absorber? *Roberto G. Abraham, Carolin S. Crawford, Michael R. Merrifield, John B. Hutchings, & Ian M. McHardy.* 415, 101, 186-C5 (1993)

Alphanumeric: OJ 287

First Ultraviolet Spectropolarimetry of Radio-selected BL Lacertae Objects. *Paul S. Smith, Richard G. Allen, & J. R. P. Angel.* 415, L83, 199-F6 (1993)

Alphanumeric: PKS 2155-304

Observations of PKS 2155-304 with the *Extreme Ultraviolet Explorer*. *H. L. Marshall, T. E. Carone, & A. Fruscione.* 414, L53, 185-B7 (1993)

GALAXIES: CLUSTERING

Second-Order Perturbation Theory in an Expanding Universe: Spherical Harmonics Expansion. *Saleem Zaroubi & Yehuda Hoffman.* 414, 20, 170-C8 (1993)

X-Ray Spectral Observations of Clusters of Galaxies Undergoing Merger Events. *Mark J. Henriksen.* 414, L5, 175-C6 (1993)

On the Angular Correlation Function of Faint Galaxies. *Yuzuru Yoshii, Bruce A. Peterson, & Fumio Takahara.* 414, 431, 176-E1 (1993)

Amplification of Cluster Correlations: The Effect of Sharp Clipping. *István Szapudi & Alexander S. Szalay.* 414, 493, 177-C12 (1993)

On Cosmological Constraints from Statistics of X-Ray Clusters. *Hiroshi Hanami.* 415, 42, 185-E6 (1993)

Distant Clusters of Galaxies Detected by X-Rays. *A. Cavaliere, S. Colafrancesco, & N. Menci.* 415, 50, 185-F1 (1993)

The X-Ray Spectra of Cluster Cooling Flows. I. Optically Thin Models. *Michael W. Wise & Craig L. Sarazin.* 415, 58, 185-F10 (1993)

The Highly Polarized Hidden Quasar IRAS 09104+4109: A Double-lobed Radio Source in a Rich Cluster. *Dean C. Hines & Beverley J. Wills.* 415, 82, 186-A10 (1993)

The Relation between Velocity Dispersion and Temperature in Clusters: Limiting the Velocity Bias. *Lori M. Lubin & Neta A. Bahcall.* 415, L17, 191-G5 (1993)

Can Extra Power Explain Periodicity on Large Scales? *Shan Luo & Ethan T. Vishniac.* 415, 450, 193-D9 (1993)

The Redshift Space Power Spectrum of Galaxies in a Cold Dark Matter Universe. *Teresa G. Brainerd & Jens V. Villumsen.* 415, L67, 199-D8 (1993)

Structure Formation with Cold plus Hot Dark Matter. *Anatoly Khlyp, Jon Holtzman, Joel Primack, & Enikő Regős.* 416, 1, 201-B1 (1993)

Simulations of Compact Groups of Galaxies: The Effect of the Dark Matter Distribution. *Paul W. Bode, Haldan N. Cohn, & Phyllis M. Lugger.* 416, 17, 201-C5 (1993)

The Shapes of Galaxy Groups. *G. Fasano, A. Pisani, R. Vio, & M. Girardi.* 416, 546, 210-B8 (1993)

Transverse Dissections of the Fundamental Planes of Elliptical Galaxies and Clusters of Galaxies. *Alvio Renzini & Luca Ciotti.* 416, L49, 216-B6 (1993)

GALAXIES: CLUSTERS: INDIVIDUAL

Name: Abell 2052

3C 317: An Amorphous Radio Source in the Cooling Flow Cluster Abell 2052. *Jun-Hui Zhao, Dean M. Sumi, J. O. Burns, & Nebojsa Duric.* 416, 51, 201-F7 (1993)

Name: Abell 2634

The Dynamics of the Galaxy Cluster Abell 2634. *J. Pinkney, G. Rhee, J. O. Burns, J. M. Hill, W. Oegerle, D. Batuski, & P. Hintzen.* 416, 36, 201-E2 (1993)

Name: Fornax

Planetary Nebulae as Standard Candles. IX. The Distance to the Fornax Cluster. *Russet McMillan, Robin Ciardullo, & George H. Jacoby.* 416, 62, 201-G7 (1993)

Name: Hydra A

Calcium Depletion in Cooling-Flow Nebulae and the Origin of the Line-emitting Gas. *Megan Donahue & G. Mark Voit.* 414, L17, 175-D11 (1993)

Magnetic Fields in the Hydra A Cluster. *Gregory B. Taylor & Richard A. Perley.* 416, 554, 210-C3 (1993)

Alphanumeric: A496

Calcium Depletion in Cooling-Flow Nebulae and the Origin of the Line-emitting Gas. *Megan Donahue & G. Mark Voit.* 414, L17, 175-D11 (1993)

Alphanumeric: 2A 0335+096

Calcium Depletion in Cooling-Flow Nebulae and the Origin of the Line-emitting Gas. *Megan Donahue & G. Mark Voit.* 414, L17, 175-D11 (1993)

Alphanumeric: MS 0440+0204

The Complex, Gravitationally Lensed Arc System in the X-Ray-selected Cluster of Galaxies MS 0440+0204. *G. A. Luppino, I. M. Gioia, J. Annis, O. Le Fèvre, & F. Hammer.* 416, 444, 208-G8 (1993)

Alphanumeric: S1101

Calcium Depletion in Cooling-Flow Nebulae and the Origin of the Line-emitting Gas. *Megan Donahue & G. Mark Voit.* 414, L17, 175-D11 (1993)

GALAXIES: COOLING FLOWS

Calcium Depletion in Cooling-Flow Nebulae and the Origin of the Line-emitting Gas. *Megan Donahue & G. Mark Voit.* 414, L17, 175-D11 (1993)

The X-Ray Spectra of Cluster Cooling Flows. I. Optically Thin Models. *Michael W. Wise & Craig L. Sarazin.* 415, 58, 185-F10 (1993)

3C 317: An Amorphous Radio Source in the Cooling Flow Cluster Abell 2052. *Jun-Hui Zhao, Dean M. Sumi, J. O. Burns, & Nebojsa Duric.* 416, 51, 201-F7 (1993)

Low-Mass Star Formation in Cooling Flow Galaxies. *James M. Schombert, Mary Barsony, & Patricia C. Hanlon.* 416, L61, 216-C7 (1993)

GALAXIES: DISTANCES AND REDSHIFTS

Molecular Gas Mass and Far-Infrared Emission from Distant Luminous Galaxies. *D. Downes, P. M. Solomon, & S. J. E. Radford.* 414, L13, 175-D6 (1993)

Large-Scale Peculiar Velocity Field Due to Infinitely Long Cosmic Strings. *Tetsuya Hara, Petri Mähönen, & Shigeru Miyoshi.* 415, 445, 193-D1 (1993)

The Rotation Curves of Galaxies at Intermediate Redshift. *Nicole P. Vogt, Terry Herter, Martha P. Haynes, & Stéphane Courteau.* 415, L95, 199-G11 (1993)

The Dynamics of the Galaxy Cluster Abell 2634. *J. Pinkney, G. Rhee, J. O. Burns, J. M. Hill, W. Oegerle, D. Baturski, & P. Hintzen.* 416, 36, 201-E2 (1993)

GALAXIES: ELLIPTICAL AND LENTICULAR, CD

The Radial Velocities of Planetary Nebulae in NGC 3379. *Robin Ciardullo, George H. Jacoby, & Herwig B. Dejonghe.* 414, 454, 176-G3 (1993)

Specific Frequencies of Globular Clusters in Elliptical Galaxies: A New Test of the Extragalactic Distance Scale. *G. de Vaucouleurs.* 415, 33, 185-D9 (1993)

Millimeter and Submillimeter Continuum Emission from Early-Type Galaxies. *Michel Fich & Paul Hodge.* 415, 75, 186-A1 (1993)

The Highly Polarized Hidden Quasar IRAS 09104+4109: A Double-lobed Radio Source in a Rich Cluster. *Dean C. Hines & Beverley J. Wills.* 415, 82, 186-A10 (1993)

A Method for Quantitative Detection of Hot Horizontal Branches in Early-Type Galaxies. *Guy Worthey.* 415, L91, 199-G6 (1993)

Stellar Mass Loss in Elliptical Galaxies and the Fueling of Active Galactic Nuclei. *Paolo Padovani & Francesca Matteucci.* 416, 26, 201-D2 (1993)

The Dynamics of the Galaxy Cluster Abell 2634. *J. Pinkney, G. Rhee, J. O. Burns, J. M. Hill, W. Oegerle, D. Baturski, & P. Hintzen.* 416, 36, 201-E2 (1993)

Bending Instabilities in Galaxy Merger Remnants. *Lars Hernquist, Jeremy S. Heyl, & David N. Spergel.* 416, L9, 207-B13 (1993)

Dark Matter Halos in Elliptical Galaxies. *Francesco Bertola, Alessandro Pizzella, Massimo Persic, & Paolo Salucci.* 416, L45, 216-B1 (1993)

Transverse Dissections of the Fundamental Planes of Elliptical Galaxies and Clusters of Galaxies. *Alvio Renzini & Luca Ciotti.* 416, L49, 216-B6 (1993)

GALAXIES: EVOLUTION

On the Angular Correlation Function of Faint Galaxies. *Yuzuru Yoshii, Bruce A. Peterson, & Fumio Takahara.* 414, 431, 176-E1 (1993)

Effects of Gas on the Global Stability of Galactic Disks: Radial Flows. *Isaac Shlosman & Masafumi Noguchi.* 414, 474, 177-B2 (1993)

Focusing of Alfvénic Wave Power in the Context of Gamma-Ray Burst Emissivity. Marco Fatuzzo & Fulvio Melia. 414, L89, 185-F7 (1993)

Galaxy Number Counts from $K = 10$ to $K = 23$. *J. P. Gardner, L. L. Cowie, & R. J. Wainscoat.* 415, L9, 191-F7 (1993)

Counter-Evolution of Faint Field Galaxies. *David C. Koo, Caryl Gronwall, & Gustavo Bruzual A.* 415, L21, 191-G10 (1993)

On ^{26}Al and Other Short-lived Interstellar Radioactivity. *Donald D. Clayton, Dieter H. Hartmann, & Mark D. Leising.* 415, L25, 192-A1 (1993)

Lyman-Alpha Emission from Galaxies. *Stéphane Charlot & S. Michael Fall.* 415, 580, 195-A13 (1993)

An Argument against Mergers of the Faint Blue Galaxies. *Julianne J. Dalcanton.* 415, L87, 199-F13 (1993)

The Rotation Curves of Galaxies at Intermediate Redshift. *Nicole P. Vogt, Terry Herter, Martha P. Haynes, & Stéphane Courteau.* 415, L95, 199-G11 (1993)

Stellar Mass Loss in Elliptical Galaxies and the Fueling of Active Galactic Nuclei. *Paolo Padovani & Francesca Matteucci.* 416, 26, 201-D2 (1993)

GALAXIES: FORMATION

Large-Scale Structure in Biased Cold Dark Matter Cosmologies. *D. G. Lambas, M. G. Abadi, M. A. Nicotra, & P. B. Tissera.* 414, 30, 170-D6 (1993)

Threshold Star-Formation Effects in the Peculiar Galaxy Arp 10 (= VV 362). *V. Charmandaris, P. N. Appleton, & A. P. Marston.* 414, 154, 172-A1 (1993)

A Hydrodynamic Approach to Cosmology: The Primeval Baryon Isocurvature Model. *Renyue Cen, Jeremiah P. Ostriker, & P. J. E. Peebles.* 415, 423, 193-B5 (1993)

Evolution of Ideal-Fluid Cosmological Perturbations. *Jai-chan Hwang.* 415, 486, 193-G12 (1993)

Structure Formation with Cold plus Hot Dark Matter. *Anatoly Khypin, Jon Holtzman, Joel Primack, & Enikő Regős.* 416, 1, 201-B1 (1993)

Bending Instabilities in Galaxy Merger Remnants. *Lars Hernquist, Jeremy S. Heyl, & David N. Spergel.* 416, L9, 207-B13 (1993)

Gravitational Collapse in an Expanding Universe: Asymptotic Self-similar Solutions. *Saleem Zaroubi & Yehuda Hoffman.* 416, 410, 208-D12 (1993)

Formation of Globular Clusters and Galactic Environments. *Yasuki Kumai, Yuichi Hashi, & Mitsuki Fujimoto.* 416, 576, 210-E5 (1993)

Dark Matter Halos in Elliptical Galaxies. *Francesco Bertola, Alessandro Pizzella, Massimo Persic, & Paolo Salucci.* 416, L45, 216-B1 (1993)

Transverse Dissections of the Fundamental Planes of Elliptical Galaxies and Clusters of Galaxies. *Alvio Renzini & Luca Ciotti.* 416, L49, 216-B6 (1993)

GALAXIES: FUNDAMENTAL PARAMETERS

The Radial Velocities of Planetary Nebulae in NGC 3379. *Robin Ciardullo, George H. Jacoby, & Herwig B. Dejonghe.* 414, 454, 176-G3 (1993)

Dark Matter Halos in Elliptical Galaxies. *Francesco Bertola, Alessandro Pizzella, Massimo Persic, & Paolo Salucci.* 416, L45, 216-B1 (1993)

Transverse Dissections of the Fundamental Planes of Elliptical Galaxies and Clusters of Galaxies. *Alvio Renzini & Luca Ciotti.* 416, L49, 216-B6 (1993)

GALAXIES: GENERAL

Ultraviolet Photometry of OB Associations in M31. *Jesse K. Hill, Joan E. Isensee, Ralph C. Bohlin, Robert W. O'Connell, Morton S. Roberts, Andrew M. Smith, & Theodore P. Stecher.* 414, L9, 175-C11 (1993)

The Einsteinian Gravitational Field of the Rigidly Rotating Disk of Dust. *G. Neugebauer & R. Meinel.* 414, L97, 185-G5 (1993)

GALAXIES: INDIVIDUAL**Messier Number: M31**

Ultraviolet Photometry of OB Associations in M31. *Jesse K. Hill, Joan E. Isensee, Ralph C. Bohlin, Robert W. O'Connell, Morton S. Roberts, Andrew M. Smith, & Theodore P. Stecher.* 414, L9, 175-C11 (1993)

On the Specific Frequencies of Globular Clusters in the Galaxy and in Messier 31. *G. de Vaucouleurs.* 415, 40, 185-E3 (1993)

The Evolution of the Globular Cluster System in a Triaxial Galaxy: Can a Galactic Nucleus Form by Globular Cluster Capture? *Roberto Capuzzo-Dolcetta*. 415, 616, 195-D13 (1993)

NGC Number: NGC 1275

Strong [Fe II] Emission from NGC 1275. *Richard J. Rudy, Ross D. Cohen, George S. Rossano, Peter Erwin, R. C. Puetter, Matthew A. Greenhouse, & Charles E. Woodward*. 414, 527, 177-F13 (1993)

NGC Number: NGC 1313

SN 1978K: An Extraordinary Supernova in the Nearby Galaxy NGC 1313. *Stuart Ryder, Lister Staveley-Smith, Michael Dopita, Robert Petre, Edward Colbert, David Malin, & Eric Schlegel*. 416, 167, 203-B6 (1993)

NGC Number: NGC 1380

SN 1992A: Ultraviolet and Optical Studies Based on *HST*, *IUE*, and CTIO Observations. *Robert P. Kirshner, David J. Jeffery, Bruno Leibundgut, Peter M. Challis, George Sonneborn, M. M. Phillips, N. B. Suntzeff, R. Chris Smith, P. Frank Winkler, Cláudia Winge, Mario Hamuy, Deidre A. Hunter, Katherine C. Roth, J. C. Blades, David Branch, Roger A. Chevalier, Claes Fransson, Nino Panagia, Robert V. Wagoner, J. Craig Wheeler, & Robert P. Harkness*. 415, 589, 195-B10 (1993)

NGC Number: NGC 3198

Sharp Edges to Neutral Hydrogen Disks in Galaxies and the Extragalactic Radiation Field. *Philip Maloney*. 414, 41, 170-E8 (1993)

NGC Number: NGC 3379

The Radial Velocities of Planetary Nebulae in NGC 3379. *Robin Ciardullo, George H. Jacoby, & Herwig B. Dejonghe*. 414, 454, 176-G3 (1993)

NGC Number: NGC 4151

Acceleration Efficiency in Nonthermal Sources and the Soft Gamma Rays from NGC 4151 Observed by OSSE and SIGMA. *Andrzej A. Zdziarski, Alan P. Lightman, & Andrzej Maciolek-Niedźwiecki*. 414, L93, 185-F13 (1993)

SMM Observations of Gamma-Ray Transients. I. A Search for Variable Emission at MeV Energies from Five Galactic and Extragalactic Sources. *M. J. Harris, G. H. Share, M. D. Leising, & J. E. Grove*. 416, 601, 210-G8 (1993)

NGC Number: NGC 4321

Star Formation in the Spiral Arms of NGC 4321. II. H I Distribution and Kinematics. *Johan H. Knapen, Jordi Cepa, John E. Beckman, M. Soledad del Rio, & Alan Pedlar*. 416, 563, 210-D1 (1993)

NGC Number: NGC 4651

Neutral Hydrogen Absorption and Emission in the Quasar/Galaxy Pair 3C 275.1/NGC 4651. *Stephen E. Schneider & Edvige Corbelli*. 414, 500, 177-D7 (1993)

NGC Number: NGC 4782/4783

Ballistic Models for Radio Jets in Colliding Galaxies: 3C 278 (NGC 4782/4783). *Kirk D. Borne & Luis Colina*. 416, 157, 203-A8 (1993)

NGC Number: NGC 5128

The Planetary Nebula System and Dynamics of NGC 5128. I. Planetary Nebulae as Standard Candles. *Xiaohui Hui, Holland C. Ford, Robin Ciardullo, & George H. Jacoby*. 414, 463, 177-A1 (1993)

Shock Excitation of the Emission-Line Filaments in Centaurus A. *Ralph S. Sutherland, Geoffrey V. Bicknell, & Michael A. Dopita*. 414, 510, 177-E7 (1993)

SMM Observations of Gamma-Ray Transients. I. A Search for Variable Emission at MeV Energies from Five Galactic and Extragalactic Sources. *M. J. Harris, G. H. Share, M. D. Leising, & J. E. Grove*. 416, 601, 210-G8 (1993)

NGC Number: NGC 5506

Soft X-Ray Spectra of Seyfert 2 Galaxies. *John S. Mulchaey, Edward Colbert, Andrew S. Wilson, Richard F. Mushotzky, & Kimberly A. Weaver*. 414, 144, 171-G1 (1993)

NGC Number: NGC 5548

Variable C IV Absorption in the Seyfert Galaxy NGC 5548: A Connection to Broad Absorption Line Quasi-stellar Objects? *J. Michael Shull & Elise R. Sachs*. 416, 536, 210-A10 (1993)

Faint Object Spectrograph Spectra of the UV Emission Lines in NGC 5548: Detection of Strong Narrow Components. *D. Michael Crenshaw, Albert Boggess, & Chi-Chao Wu*. 416, L67, 216-D1 (1993)

Name: Arp 10

Threshold Star-Formation Effects in the Peculiar Galaxy Arp 10 (= VV 362). *V. Charmandaris, P. N. Appleton, & A. P. Marston*. 414, 154, 172-A1 (1993)

Name: Markarian 348

Soft X-Ray Spectra of Seyfert 2 Galaxies. *John S. Mulchaey, Edward Colbert, Andrew S. Wilson, Richard F. Mushotzky, & Kimberly A. Weaver*. 414, 144, 171-G1 (1993)

Alphanumeric: 3C 285

Induced Star Formation in a Radio Lobe of 3C 285? *Wil J. M. van Breugel & Arjun Dey*. 414, 563, 178-C3 (1993)

Alphanumeric: IC 342

X-Ray Emission from the Starburst Galaxy IC 342. *Joel N. Bregman, Caroline V. Cox, & Kohji Tomisaka*. 415, L79, 199-E13 (1993)

Alphanumeric: IC 4329A

OSSE Observations of the Bright Seyfert 1 Galaxy IC 4329A. *A. C. Fabian, K. Nandra, A. Celotti, M. J. Rees, J. E. Grove, & W. N. Johnson*. 416, L57, 216-C1 (1993)

Alphanumeric: IC 4553

Formaldehyde Emission in Galaxies. *Willem A. Baan, Aubrey D. Haschick, & Robert Uglesich*. 415, 140, 186-G1 (1993)

Alphanumeric: IRAS 09104+4109

The Highly Polarized Hidden Quasar IRAS 09104+4109: A Double-lobed Radio Source in a Rich Cluster. *Dean C. Hines & Beverley J. Wills*. 415, 82, 186-A10 (1993)

Alphanumeric: MCG-5-23-16

Soft X-Ray Spectra of Seyfert 2 Galaxies. *John S. Mulchaey, Edward Colbert, Andrew S. Wilson, Richard F. Mushotzky, & Kimberly A. Weaver*. 414, 144, 171-G1 (1993)

GALAXIES: INTERACTIONS

QSO Heavy-Element Absorption Line Systems and Large Galactic Halos by Satellite Accretion. *Boqi Wang*. 415, 174, 187-B12 (1993)

CO Emission in the Radio-loud Quasar 3C 48. *N. Z. Scoville, S. Padin, D. B. Sanders, B. T. Soifer, & M. S. Yun*. 415, L75, 199-E7 (1993)

An Argument against Mergers of the Faint Blue Galaxies. *Julianne J. Dalcanton*. 415, L87, 199-F13 (1993)

Ballistic Models for Radio Jets in Colliding Galaxies: 3C 278 (NGC 4782/4783). *Kirk D. Borne & Luis Colina*. 416, 157, 203-A8 (1993)

Bending Instabilities in Galaxy Merger Remnants. *Lars Hernquist, Jeremy S. Heyl, & David N. Spergel*. 416, L9, 207-B13 (1993)

Structure of Merger Remnants. III. Phase-Space Constraints. *Lars Hernquist, David N. Spergel, & Jeremy S. Heyl*. 416, 415, 208-E4 (1993)

Formation of Globular Clusters and Galactic Environments. *Yasuki Kumai, Yuichi Hashi, & Mitsuaki Fujimoto*. 416, 576, 210-E5 (1993)

GALAXIES: INTERGALACTIC MEDIUM

Properties of High-Redshift Lyman-Alpha Clouds. I. Statistical Analysis of the Schneider-Schmidt-Gunn Quasars. *William H. Press, George B. Rybicki, & Donald P. Schneider*. 414, 64, 170-G7 (1993)

Noncosmological Signal Contributions to the COBE DMR Anisotropy Maps. *C. L. Bennett, G. Hinshaw, A. Banday, A. Kogut, E. L. Wright, K. Loewenstein, & E. S. Cheng*. 414, L76, 185-D13 (1993)

The X-Ray Spectra of Cluster Cooling Flows. I. Optically Thin Models. *Michael W. Wise & Craig L. Sarazin*. 415, 58, 185-F10 (1993)

QSO Heavy-Element Absorption Line Systems and Large Galactic Halos by Satellite Accretion. *Boqi Wang*. 415, 174, 187-B12 (1993)

The Two-Point Correlation Function of Randomly Distributed Lyman-Alpha Clouds. *Mark A. Fardal & J. Michael Shull*. 415, 524, 194-D1 (1993)

The Lyman-Alpha Forest of PKS 2126-158 at High Resolution. *Emanuele Giallongo, Stefano Cristiani, Adriano Fontana, & Dario Trèvese*. 416, 137, 202-F10 (1993)

Magnetic Fields in the Hydra A Cluster. *Gregory B. Taylor & Richard A. Perley*. 416, 554, 210-C3 (1993)

GALAXIES: ISM

- Sharp Edges to Neutral Hydrogen Disks in Galaxies and the Extragalactic Radiation Field. *Philip Maloney*. 414, 41, 170-E8 (1993)
- Analysis of the Distribution of Pitch Angles in Model Galactic Disks: Numerical Methods and Algorithms. *William S. Russell & William W., Jr. Roberts*. 414, 86, 171-B5 (1993)
- Kiloparsec-Scale Molecular Gas Excitation in Spiral Galaxies. *W. F. Wall, D. T. Jaffe, F. N. Bash, F. P. Israel, P. R. Maloney, & F. Baas*. 414, 98, 171-C5 (1993)
- Molecular Gas Mass and Far-Infrared Emission from Distant Luminous Galaxies. *D. Downes, P. M. Solomon, & S. J. E. Radford*. 414, L13, 175-D6 (1993)
- Calcium Depletion in Cooling-Flow Nebulae and the Origin of the Line-emitting Gas. *Megan Donahue & G. Mark Voit*. 414, L17, 175-D11 (1993)
- Strong [Fe II] Emission from NGC 1275. *Richard J. Rudy, Ross D. Cohen, George S. Rossano, Peter Erwin, R. C. Puetter, Matthew A. Greenhouse, & Charles E. Woodward*. 414, 527, 177-F13 (1993)
- Millimeter and Submillimeter Continuum Emission from Early-Type Galaxies. *Michel Fich & Paul Hodge*. 415, 75, 186-A1 (1993)
- Formaldehyde Emission in Galaxies. *Willem A. Baan, Aubrey D. Haschick, & Robert Uglesich*. 415, 140, 186-G1 (1993)
- On ^{26}Al and Other Short-lived Interstellar Radioactivity. *Donald D. Clayton, Dieter H. Hartmann, & Mark D. Leising*. 415, L25, 192-A1 (1993)
- Lyman-Alpha Emission from Galaxies. *Stéphane Charlot & S. Michael Fall*. 415, 580, 195-A13 (1993)

GALAXIES: JETS

- Radiative Instability in Synchrotron-emitting Plasmas. *P. Rossi, G. Bodo, S. Massaglia, & A. Ferrari*. 414, 112, 171-D7 (1993)
- Shock Excitation of the Emission-Line Filaments in Centaurus A. *Ralph S. Sutherland, Geoffrey V. Bicknell, & Michael A. Dopita*. 414, 510, 177-E7 (1993)
- Radio-selected BL Lacertae Objects and Some Correlations. *J. H. Fan, G. Z. Xie, J. J. Li, J. Liu, S. L. Wen, R. R. Huang, Z. M. Tang, & Y. J. Wang*. 415, 113, 186-D12 (1993)
- Electromagnetically Driven Relativistic Jets: A Class of Self-consistent Numerical Solutions. *Zhi-Yun Li*. 415, 118, 186-E4 (1993)
- 3C 317: An Amorphous Radio Source in the Cooling Flow Cluster Abell 2052. *Jun-Hui Zhao, Dean M. Sumi, J. O. Burns, & Nebojsa Duric*. 416, 51, 201-F7 (1993)
- Polarization of Compact Radio Sources. *C.-I. Björnsson*. 416, 104, 202-C11 (1993)
- Unified Model for X-Ray- and Radio-selected BL Lacertae Objects. *A. Celotti, L. Maraschi, G. Ghisellini, A. Caccianiga, & T. Maccacaro*. 416, 118, 202-D13 (1993)
- Ballistic Models for Radio Jets in Colliding Galaxies: 3C 278 (NGC 4782/4783). *Kirk D. Borne & Luis Colina*. 416, 157, 203-A8 (1993)
- Model for the High-Energy Emission from Blazars. *Charles D. Dermer & Reinhard Schlickeiser*. 416, 458, 209-A11 (1993)
- Milliarcsecond Polarization Structure of 24 Objects from the Pearson-Readhead Sample of Bright Extragalactic Radio Sources. II. Discussion. *T. V. Cawthorne, J. F. C. Wardle, D. H. Roberts, & D. C. Gabuzda*. 416, 519, 209-G5 (1993)

GALAXIES: KINEMATICS AND DYNAMICS

- Sharp Edges to Neutral Hydrogen Disks in Galaxies and the Extragalactic Radiation Field. *Philip Maloney*. 414, 41, 170-E8 (1993)
- Analysis of the Distribution of Pitch Angles in Model Galactic Disks: Numerical Methods and Algorithms. *William S. Russell & William W., Jr. Roberts*. 414, 86, 171-B5 (1993)
- Effects of Gas on the Global Stability of Galactic Disks: Radial Flows. *Isaac Shlosman & Masafumi Noguchi*. 414, 474, 177-B2 (1993)
- A New Way to Locate Corotation Resonances in Spiral Galaxies. *Blaise Canzian*. 414, 487, 177-C4 (1993)
- Shock Excitation of the Emission-Line Filaments in Centaurus A. *Ralph S. Sutherland, Geoffrey V. Bicknell, & Michael A. Dopita*. 414, 510, 177-E7 (1993)

- The Evolution of the Globular Cluster System in a Triaxial Galaxy: Can a Galactic Nucleus Form by Globular Cluster Capture? *Roberto Capuzzo-Dolcetta*. 415, 616, 195-D13 (1993)
- The Rotation Curves of Galaxies at Intermediate Redshift. *Nicole P. Vogt, Terry Herter, Martha P. Haynes, & Stéphane Courteau*. 415, L95, 199-G11 (1993)
- Kinematical Modeling of Warps in the H I Disks of Galaxies. *Dimitris M. Christodoulou, Joel E. Tohline, & Thomas Y. Steiman-Cameron*. 416, 74, 202-A7 (1993)
- Bending Instabilities in Galaxy Merger Remnants. *Lars Hernquist, Jeremy S. Heyl, & David N. Spergel*. 416, L9, 207-B13 (1993)
- Star Formation in the Spiral Arms of NGC 4321. II. H I Distribution and Kinematics. *Johan H. Knapen, Jordi Cepa, John E. Beckman, M. Soledad del Rio, & Alan Pedlar*. 416, 563, 210-D1 (1993)
- Dark Matter Halos in Elliptical Galaxies. *Francesco Bertola, Alessandro Pizzella, Massimo Persic, & Paolo Salucci*. 416, L45, 216-B1 (1993)
- Using the Schrödinger Equation to Simulate Collisionless Matter. *Lawrence M. Widrow & Nick Kaiser*. 416, L71, 216-D6 (1993)
- GALAXIES: LUMINOSITY FUNCTION, MASS FUNCTION**
- Counter-Evolution of Faint Field Galaxies. *David C. Koo, Caryl Gronwall, & Gustavo Bruzual A.*. 415, L21, 191-G10 (1993)
- An Argument against Mergers of the Faint Blue Galaxies. *Julianne J. Dalcanton*. 415, L87, 199-F13 (1993)
- Unified Model for X-Ray- and Radio-selected BL Lacertae Objects. *A. Celotti, L. Maraschi, G. Ghisellini, A. Caccianiga, & T. Maccacaro*. 416, 118, 202-D13 (1993)
- Smoothed Nonparametric Estimation of the Luminosity Function for Flux-limited Samples. *David Cadiz & Vahé Petrosian*. 416, 450, 209-A1 (1993)
- GALAXIES: MAGELLANIC CLOUDS**
- Hidden Supernova Remnants in the Large Magellanic Cloud H II Complex N44. *You-Hua Chu, Mordecai-Mark Mac Low, Guillermo Garcia-Segura, Bart Wakker, & Robert C. Kennicutt, Jr.*. 414, 213, 172-F2 (1993)
- High-Resolution X-Ray Spectroscopy of the Supernova Remnant N132D. *Una Hwang, John P. Hughes, Claude R. Canizares, & Thomas H. Markert*. 414, 219, 172-F11 (1993)
- Bright Planetary Nebulae as Probes of Chemical Evolution. *Michael G. Richer*. 415, 240, 188-A6 (1993)
- The Age of the Large Magellanic Cloud Cluster NGC 1953. *J. R. Mould, D. A. Xystus, G. S. Da Costa, & R. A. Schommer*. 416, 582, 210-E12 (1993)
- GALAXIES: MAGNETIC FIELDS**
- Milliarcsecond Polarization Structure of 24 Objects from the Pearson-Readhead Sample of Bright Extragalactic Radio Sources. II. Discussion. *T. V. Cawthorne, J. F. C. Wardle, D. H. Roberts, & D. C. Gabuzda*. 416, 519, 209-G5 (1993)
- GALAXIES: NUCLEI**
- The Genesis of Starbursts and Infrared Emission in the Centers of Galaxies. *C. M. Telesco, L. L. Dressel, & R. D. Wolstencroft*. 414, 120, 171-E3 (1993)
- Molecular Gas Mass and Far-Infrared Emission from Distant Luminous Galaxies. *D. Downes, P. M. Solomon, & S. J. E. Radford*. 414, L13, 175-D6 (1993)
- Strong [Fe II] Emission from NGC 1275. *Richard J. Rudy, Ross D. Cohen, George S. Rossano, Peter Erwin, R. C. Puetter, Matthew A. Greenhouse, & Charles E. Woodward*. 414, 527, 177-F13 (1993)
- IRS 16: The Galaxy's Central Wimp? *Peter Tamblyn & G. H. Rieke*. 414, 573, 178-D1 (1993)
- Does a Luminosity-dependent Continuum Shape Cause the Baldwin Effect? *Wei Zheng & Matthew A. Malkan*. 415, 517, 194-C6 (1993)
- The Evolution of the Globular Cluster System in a Triaxial Galaxy: Can a Galactic Nucleus Form by Globular Cluster Capture? *Roberto Capuzzo-Dolcetta*. 415, 616, 195-D13 (1993)
- Stellar Mass Loss in Elliptical Galaxies and the Fueling of Active Galactic Nuclei. *Paolo Padovani & Francesca Matteucci*. 416, 26, 201-D2 (1993)
- Radio and Near-Infrared [Fe II] Emission from Active Galaxies. *Duncan A. Forbes & Martin J. Ward*. 416, 150, 202-G12 (1993)
- The Iron K Line as a Probe of Beamed X-Ray Emission in Active Galactic Nuclei. *T. Yaqoob, B. McKernan, C. Done, P. J. Serlemitsos, & K. A. Weaver*. 416, L5, 207-B7 (1993)

GALAXIES: PHOTOMETRY

- On the Angular Correlation Function of Faint Galaxies. *Yuzuru Yoshii, Bruce A. Peterson, & Fumio Takahara.* 414, 431, 176-E1 (1993)
- Counter-Evolution of Faint Field Galaxies. *David C. Koo, Caryl Gronwall, & Gustavo Bruzual A.* 415, L21, 191-G10 (1993)
- Does a Luminosity-dependent Continuum Shape Cause the Baldwin Effect? *Wei Zheng & Matthew A. Malkan.* 415, 517, 194-C6 (1993)
- Low-Mass Star Formation in Cooling Flow Galaxies. *James M. Schombert, Mary Barsony, & Patricia C. Hanlon.* 416, L61, 216-C7 (1993)

GALAXIES: QUASARS: ABSORPTION LINES

- Properties of High-Redshift Lyman-Alpha Clouds. I. Statistical Analysis of the Schneider-Schmidt-Gunn Quasars. *William H. Press, George B. Rybicki, & Donald P. Schneider.* 414, 64, 170-G7 (1993)
- QSO Heavy-Element Absorption Line Systems and Large Galactic Halos by Satellite Accretion. *Boqi Wang.* 415, 174, 187-B12 (1993)
- The Two-Point Correlation Function of Randomly Distributed Lyman-Alpha Clouds. *Mark A. Fardal & J. Michael Shull.* 415, 524, 194-D1 (1993)
- The Origin of Mg II Absorption-Line Systems of Quasi-stellar Objects. *Ruth Gruenwald & Sueli M. Viegas.* 415, 534, 194-E1 (1993)
- On the Geometry, Covering Factor, and Scattering-Emission Properties of QSO Broad Absorption-Line Regions. *Fred Hamann, Kirk T. Korista, & Simon L. Morris.* 415, 541, 194-E11 (1993)
- The Lyman-Alpha Forest of PKS 2126-158 at High Resolution. *Emanuele Giallongo, Stefano Cristiani, Adriano Fontana, & Dario Trèvese.* 416, 137, 202-F10 (1993)

GALAXIES: QUASARS: EMISSION LINES

- Optical Lines in High-Redshift Quasi-stellar Objects: Balmer Lines, [O III], and Fe II. *Gary J. Hill, Keith L. Thompson, & Richard Elston.* 414, L1, 175-C1 (1993)
- The "Baldwin Effect" in Wolf-Rayet Stars. *Patrick Morris, Peter S. Conti, Henny J. G. L. M. Lamers, & Gloria Koenigsberger.* 414, L25, 175-E7 (1993)

GALAXIES: QUASARS: GENERAL

- Formation of Quasar Clouds by Thermal Instability in the Presence of Alfvén Wave Heating. *D. R. Gonçalves, V. Jatenco-Pereira, & R. Opher.* 414, 57, 170-F12 (1993)
- Effects of Gas on the Global Stability of Galactic Disks: Radial Flows. *Isaac Shlosman & Masafumi Noguchi.* 414, 474, 177-B2 (1993)
- X-Ray Variability of Active Galactic Nuclei: A Universal Power Spectrum with Luminosity-dependent Amplitude. *A. Lawrence & I. Papadakis.* 414, L85, 185-F1 (1993)
- The Einsteinian Gravitational Field of the Rigidly Rotating Disk of Dust. *G. Neugebauer & R. Meinel.* 414, L97, 185-G5 (1993)
- The Highly Polarized Hidden Quasar IRAS 09104+4109: A Double-lobed Radio Source in a Rich Cluster. *Dean C. Hines & Beverley J. Wills.* 415, 82, 186-A10 (1993)
- EGRET Observations of Active Galactic Nuclei: 0836+710, 0454-234, 0804+499, 0906+430, 1510-089, and 2356+196. *D. J. Thompson, D. L. Bertsch, B. L. Dingus, C. E. Fichtel, R. C. Hartman, S. D. Hunter, G. Kanbach, D. A. Kniffen, Y. C. Lin, J. R. Mattox, H. A. Mayer-Hasselwander, P. F. Michelson, C. von Montigny, P. L. Nolan, E. J. Schneid, & P. Sreekumar.* 415, L13, 191-F13 (1993)
- Does a Luminosity-dependent Continuum Shape Cause the Baldwin Effect? *Wei Zheng & Matthew A. Malkan.* 415, 517, 194-C6 (1993)
- Statistics of QSO Broad Emission-Line Profiles. I. The C IV $\lambda 1549$ Line and the $\lambda 1400$ Feature. *Beverley J. Wills, M. S. Brotherton, D. Fang, Charles C. Steidel, & Wallace L. W. Sargent.* 415, 563, 194-G8 (1993)
- New Upper Limits on Intergalactic Infrared Radiation from High-Energy Astrophysics. *F. W. Stecker & O. C. De Jager.* 415, L71, 199-E1 (1993)
- CO Emission in the Radio-loud Quasar 3C 48. *N. Z. Scoville, S. Padin, D. B. Sanders, B. T. Soifer, & M. S. Yun.* 415, L75, 199-E7 (1993)
- Stellar Mass Loss in Elliptical Galaxies and the Fueling of Active Galactic Nuclei. *Paolo Padovani & Francesca Matteucci.* 416, 26, 201-D2 (1993)
- The Ultraviolet Continua of Blazars: A Reconsideration of IUE Archives. *E. Pian & A. Treves.* 416, 130, 202-E14 (1993)

Early-Type Galaxies, Dark Halos, and Gravitational Lensing Statistics. *Dan Maoz & Hans-Walter Rix.* 416, 425, 208-F1 (1993)

Smoothed Nonparametric Estimation of the Luminosity Function for Flux-limited Samples. *David Cadiz & Vahé Petrosian.* 416, 450, 209-A1 (1993)

Model for the High-Energy Emission from Blazars. *Charles D. Dermer & Reinhard Schlickeiser.* 416, 458, 209-A11 (1993)

Structure Function Analysis of High Radio Frequency Variability in the Metsähovi Monitoring Sample of Active Galactic Nuclei. *M. Lainela & E. Valtaoja.* 416, 485, 209-C12 (1993)

Milliarcsecond Polarization Structure of 24 Objects from the Pearson-Readhead Sample of Bright Extragalactic Radio Sources. I. The Images. *T. V. Cawthorne, J. F. C. Wardle, D. H. Roberts, D. C. Gabuzda, & L. F. Brown.* 416, 496, 209-D11 (1993)

Milliarcsecond Polarization Structure of 24 Objects from the Pearson-Readhead Sample of Bright Extragalactic Radio Sources. II. Discussion. *T. V. Cawthorne, J. F. C. Wardle, D. H. Roberts, & D. C. Gabuzda.* 416, 519, 209-G5 (1993)

Variable C IV Absorption in the Seyfert Galaxy NGC 5548: A Connection to Broad Absorption Line Quasi-stellar Objects? *J. Michael Shull & Elise R. Sachs.* 416, 536, 210-A10 (1993)

GALAXIES: QUASARS: INDIVIDUAL

Name: Markarian 421

New Upper Limits on Intergalactic Infrared Radiation from High-Energy Astrophysics. *F. W. Stecker & O. C. De Jager.* 415, L71, 199-E1 (1993)

Alphanumeric: 0933+733

Optical Lines in High-Redshift Quasi-stellar Objects: Balmer Lines, [O III], and Fe II. *Gary J. Hill, Keith L. Thompson, & Richard Elston.* 414, L1, 175-C1 (1993)

Alphanumeric: 1225+317

Optical Lines in High-Redshift Quasi-stellar Objects: Balmer Lines, [O III], and Fe II. *Gary J. Hill, Keith L. Thompson, & Richard Elston.* 414, L1, 175-C1 (1993)

Alphanumeric: 1246-057

Optical Lines in High-Redshift Quasi-stellar Objects: Balmer Lines, [O III], and Fe II. *Gary J. Hill, Keith L. Thompson, & Richard Elston.* 414, L1, 175-C1 (1993)

Alphanumeric: 1413+117

Optical Lines in High-Redshift Quasi-stellar Objects: Balmer Lines, [O III], and Fe II. *Gary J. Hill, Keith L. Thompson, & Richard Elston.* 414, L1, 175-C1 (1993)

Alphanumeric: 2126-158

The Lyman-Alpha Forest of PKS 2126-158 at High Resolution. *Emanuele Giallongo, Stefano Cristiani, Adriano Fontana, & Dario Trèvese.* 416, 137, 202-F10 (1993)

Alphanumeric: 3C 48

CO Emission in the Radio-loud Quasar 3C 48. *N. Z. Scoville, S. Padin, D. B. Sanders, B. T. Soifer, & M. S. Yun.* 415, L75, 199-E7 (1993)

Alphanumeric: 3C 275.1

Neutral Hydrogen Absorption and Emission in the Quasar/Galaxy Pair 3C 275.1/NGC 4651. *Stephen E. Schneider & Edvige Corbelli.* 414, 500, 177-D7 (1993)

Alphanumeric: 3C 351

The ROSAT Spectrum of 3C 351: A Warm Absorber in an X-Ray-"quiet" Quasar? *Fabrizio Fiore, Martin Elvis, Smita Mathur, Belinda J. Wilkes, & Jonathan C. McDowell.* 415, 129, 186-F1 (1993)

Alphanumeric: CTA 102

Observation of High-Energy Gamma Rays from the Quasi-stellar Object CTA 102. *P. L. Nolan, D. L. Bertsch, C. E. Fichtel, R. C. Hartman, S. D. Hunter, G. Kanbach, D. A. Kniffen, Y. C. Lin, J. R. Mattox, H. A. Mayer-Hasselwander, P. F. Michelson, C. von Montigny, E. Schneid, P. Sreekumar, & D. J. Thompson.* 414, 82, 171-A13 (1993)

Alphanumeric: OI 287

Hubble Space Telescope Ultraviolet Spectroscopy of the Highly Polarized but Quiescent Quasar OI 287. *Robert Antonucci, Anne L. Kinney, & Todd Hurt.* 414, 506, 177-E1 (1993)

GALAXIES: SEYFERT

- Formation of Quasar Clouds by Thermal Instability in the Presence of Alfvén Wave Heating. *D. R. Gonçalves, V. Jatenco-Pereira, & R. Opher.* 414, 57, 170-F12 (1993)
- Soft X-Ray Spectra of Seyfert 2 Galaxies. *John S. Mulchaey, Edward Colbert, Andrew S. Wilson, Richard F. Mushotzky, & Kimberly A. Weaver.* 414, 144, 171-G1 (1993)
- Effects of Gas on the Global Stability of Galactic Disks: Radial Flows. *Isaac Shlosman & Masafumi Noguchi.* 414, 474, 177-B2 (1993)
- Strong [Fe II] Emission from NGC 1275. *Richard J. Rudy, Ross D. Cohen, George S. Rossano, Peter Erwin, R. C. Puetter, Matthew A. Greenhouse, & Charles E. Woodward.* 414, 527, 177-F13 (1993)
- Effects of Internal Dust on the Narrow-Line Region Lyman and Balmer Decrements. *Luc Binette, John Wang, Montserrat Villar-Martin, Peter G. Martin, & Gladis Magris C.* 414, 535, 177-G9 (1993)
- Spectroscopic Study of the CfA Sample of Seyfert Galaxies. *Donald E. Osterbrock & André Martel.* 414, 552, 178-B2 (1993)
- X-Ray Variability of Active Galactic Nuclei: A Universal Power Spectrum with Luminosity-dependent Amplitude. *A. Lawrence & I. Papadakis.* 414, L85, 185-F1 (1993)
- Acceleration Efficiency in Nonthermal Sources and the Soft Gamma Rays from NGC 4151 Observed by OSSE and SIGMA. *Andrzej A. Zdziarski, Alan P. Lightman, & Andrzej Maciolek-Niedzwiecki.* 414, L93, 185-F13 (1993)
- Does a Luminosity-dependent Continuum Shape Cause the Baldwin Effect? *Wei Zheng & Matthew A. Malkan.* 415, 517, 194-C6 (1993)
- Radio and Near-Infrared [Fe II] Emission from Active Galaxies. *Duncan A. Forbes & Martin J. Ward.* 416, 150, 202-G12 (1993)
- The Iron K Line as a Probe of Beamed X-Ray Emission in Active Galactic Nuclei. *T. Yaqoob, B. McKernan, C. Done, P. J. Serlemis, & K. A. Weaver.* 416, L5, 207-B7 (1993)
- Variable C IV Absorption in the Seyfert Galaxy NGC 5548: A Connection to Broad Absorption Line Quasi-stellar Objects? *J. Michael Shull & Elise R. Sachs.* 416, 536, 210-A10 (1993)
- EGRET Limits on High-Energy Gamma-Ray Emission from X-Ray- and Low-Energy Gamma-Ray-selected Seyfert Galaxies. *Y. C. Lin, D. L. Berisch, B. L. Dingus, C. E. Fichtel, R. C. Hartman, S. D. Hunter, G. Kanbach, D. A. Kniffen, J. R. Mattox, H. A. Mayer-Hasselwander, P. F. Michelson, C. von Montigny, P. L. Nolan, E. Schneid, P. Sreekumar, & D. J. Thompson.* 416, L53, 216-B11 (1993)
- OSSE Observations of the Bright Seyfert 1 Galaxy IC 4329A. *A. C. Fabian, K. Nandra, A. Celotti, M. J. Rees, J. E. Grove, & W. N. Johnson.* 416, L57, 216-C1 (1993)
- Faint Object Spectrograph Spectra of the UV Emission Lines in NGC 5548: Detection of Strong Narrow Components. *D. Michael Crenshaw, Albert Boggess, & Chi-Chao Wu.* 416, L67, 216-D1 (1993)

GALAXIES: SPIRAL

- Analysis of the Distribution of Pitch Angles in Model Galactic Disks: Numerical Methods and Algorithms. *William S. Russell & William W., Jr. Roberts.* 414, 86, 171-B5 (1993)
- Kiloparsec-Scale Molecular Gas Excitation in Spiral Galaxies. *W. F. Wall, D. T. Jaffe, F. N. Bash, F. P. Israel, P. R. Maloney, & F. Baas.* 414, 98, 171-C5 (1993)
- Star Formation in the Spiral Arms of NGC 4321. II. H I Distribution and Kinematics. *Johan H. Knapen, Jordi Cepa, John E. Beckman, M. Soledad del Rio, & Alan Pedlar.* 416, 563, 210-D1 (1993)

GALAXIES: STARBURST

- The Genesis of Starbursts and Infrared Emission in the Centers of Galaxies. *C. M. Telesco, L. L. Dressel, & R. D. Wolstencroft.* 414, 120, 171-E3 (1993)
- Molecular Gas Mass and Far-Infrared Emission from Distant Luminous Galaxies. *D. Downes, P. M. Solomon, & S. J. E. Radford.* 414, L13, 175-D6 (1993)
- CO Emission in the Radio-loud Quasar 3C 48. *N. Z. Scoville, S. Padin, D. B. Sanders, B. T. Soifer, & M. S. Yun.* 415, L75, 199-E7 (1993)
- X-Ray Emission from the Starburst Galaxy IC 342. *Joel N. Bregman, Caroline V. Cox, & Kohji Tomisaka.* 415, L79, 199-E13 (1993)

GALAXIES: STELLAR CONTENT

- Threshold Star-Formation Effects in the Peculiar Galaxy Arp 10 (= VV 362). *V. Charmandaris, P. N. Appleton, & A. P. Marston.* 414, 154, 172-A1 (1993)
- On the Specific Frequencies of Globular Clusters in the Galaxy and in Messier 31. *G. de Vaucouleurs.* 415, 40, 185-E3 (1993)
- Lyman-Alpha Emission from Galaxies. *Stéphane Charlot & S. Michael Fall.* 415, 580, 195-A13 (1993)
- A Method for Quantitative Detection of Hot Horizontal Branches in Early-Type Galaxies. *Guy Worthey.* 415, L91, 199-G6 (1993)

GALAXIES: STRUCTURE

- The Genesis of Starbursts and Infrared Emission in the Centers of Galaxies. *C. M. Telesco, L. L. Dressel, & R. D. Wolstencroft.* 414, 120, 171-E3 (1993)
- Effects of Gas on the Global Stability of Galactic Disks: Radial Flows. *Isaac Shlosman & Masafumi Noguchi.* 414, 474, 177-B2 (1993)
- A New Way to Locate Corotation Resonances in Spiral Galaxies. *Blaise Canzian.* 414, 487, 177-C4 (1993)
- QSO Heavy-Element Absorption Line Systems and Large Galactic Halos by Satellite Accretion. *Boqi Wang.* 415, 174, 187-B12 (1993)
- 3C 317: An Amorphous Radio Source in the Cooling Flow Cluster Abell 2052. *Jun-Hui Zhao, Dean M. Sumi, J. O. Burns, & Nebojsa Duric.* 416, 51, 201-F7 (1993)
- Kinematical Modeling of Warps in the H I Disks of Galaxies. *Dimitris M. Christodoulou, Joel E. Tohline, & Thomas Y. Steiman-Cameron.* 416, 74, 202-A7 (1993)
- Early-Type Galaxies, Dark Halos, and Gravitational Lensing Statistics. *Dan Maoz & Hans-Walter Rix.* 416, 425, 208-F1 (1993)
- Star Formation in the Spiral Arms of NGC 4321. II. H I Distribution and Kinematics. *Johan H. Knapen, Jordi Cepa, John E. Beckman, M. Soledad del Rio, & Alan Pedlar.* 416, 563, 210-D1 (1993)
- Dark Matter Halos in Elliptical Galaxies. *Francesco Bertola, Alessandro Pizzella, Massimo Persic, & Paolo Salucci.* 416, L45, 216-B1 (1993)

GALAXY: CENTER

- Compton-backscattered Annihilation Radiation from the Galactic Center Region. *D. M. Smith, R. P. Lin, P. Feffer, S. Slassi, K. Hurley, J. Matteson, H. B. Bowman, R. M. Pelling, M. Briggs, D. Gruber, L. E. Peterson, R. E. Lingenfelter, P. von Ballmoos, I. Malet, M. Niel, G. Vedrenne, P. Durouchoux, P. Wallyn, C. Chapuis, C. Cork, D. Landis, P. Luke, N. Madden, D. Malone, & R. Pehl.* 414, 165, 172-B1 (1993)
- How Many Positron Sources in the Galactic Center Region? *P. Wallyn & Ph. Durouchoux.* 414, 178, 172-C2 (1993)
- IRS 16: The Galaxy's Central Wimp? *Peter Tambllyn & G. H. Rieke.* 414, 573, 178-D1 (1993)
- SMM Observations of Gamma-Ray Transients. I. A Search for Variable Emission at MeV Energies from Five Galactic and Extragalactic Sources. *M. J. Harris, G. H. Share, M. D. Leising, & J. E. Grove.* 416, 601, 210-G8 (1993)

GALAXY: GLOBULAR CLUSTERS: GENERAL

- Stability of Dense Stellar Clusters against Relativistic Collapse. *G. S. Bisnovatyi-Kogan, M. Merafina, R. Ruffini, & E. Vesperini.* 414, 187, 172-C13 (1993)
- The α -enhanced Isochrones and Their Impact on the Fits to the Galactic Globular Cluster System. *Maurizio Salaris, Alessandro Chieffi, & Oscar Straniero.* 414, 580, 178-D10 (1993)
- Specific Frequencies of Globular Clusters in Elliptical Galaxies: A New Test of the Extragalactic Distance Scale. *G. de Vaucouleurs.* 415, 33, 185-D9 (1993)
- On the Specific Frequencies of Globular Clusters in the Galaxy and in Messier 31. *G. de Vaucouleurs.* 415, 40, 185-E3 (1993)
- The Evolution of the Globular Cluster System in a Triaxial Galaxy: Can a Galactic Nucleus Form by Globular Cluster Capture? *Roberto Capuzzo-Dolcetta.* 415, 616, 195-D13 (1993)
- Binary-Single Star Interactions in Globular Clusters. *Steinn Sigurdsson & E. S. Phinney.* 415, 631, 195-F3 (1993)
- Formation of Globular Clusters and Galactic Environments. *Yasuki Kumai, Yuichi Hashi, & Mitsuaki Fujimoto.* 416, 576, 210-E5 (1993)

GALAXY: GLOBULAR CLUSTERS: INDIVIDUAL

Messier Number: M4

- Genesis of a Planet in Messier 4. *Steinn Sigurdsson.* 415, L43, 192-B13 (1993)

NGC Number: NGC 1953

The Age of the Large Magellanic Cloud Cluster NGC 1953. *J. R. Mould, D. A. Xystus, G. S. Da Costa, & R. A. Schommer.* 416, 582, 210-E12 (1993)

NGC Number: NGC 6121

Genesis of a Planet in Messier 4. *Steinn Sigurdsson.* 415, L43, 192-B13 (1993)

GALAXY: HALO

Anomalous Resistivity and the Evolution of Magnetic Field Topology. *E. N. Parker.* 414, 389, 174-G5 (1993)

QSO Heavy-Element Absorption Line Systems and Large Galactic Halos by Satellite Accretion. *Boqi Wang.* 415, 174, 187-B12 (1993)

A Determination of the Distance to the High-Velocity Cloud Complex M. *Laura Danly, C. E. Albert, & K. D. Kuntz.* 416, L29, 207-D13 (1993)

GALAXY: KINEMATICS AND DYNAMICS

Forbidden Velocity Gas Detected in Ultraviolet Interstellar Absorption toward Four Distant Inner Galaxy Stars. *Todd M. Tripp, Kenneth R. Sembach, & Blair D. Savage.* 415, 652, 196-A1 (1993)

GALAXY: OPEN CLUSTERS AND ASSOCIATIONS: INDIVIDUAL

Name: Hyades

Lithium in the Hyades. I. New Observations. *J. A. Thorburn, L. M. Hobbs, Constantine P. Delyannis, & M. H. Pinsonneault.* 415, 150, 186-G12 (1993)

ROSAT X-Ray Detection of ϵ Taurus: Revisiting the Coronal and Transition Region Emission of the Hyades Giants. *A. Collura, A. Maggio, G. Micela, S. Sciortino, F. R. Harnden, Jr., & R. Rosner.* 416, 204, 203-E8 (1993)

Name: ρ Ophiuchi

The Stellar Population in the ρ Ophiuchi Cluster. *F. Comeron, G. H. Rieke, A. Burrows, & M. J. Rieke.* 416, 185, 203-D1 (1993)

Alphanumeric: IC 2391

The Evolution of Stellar Coronae: Initial Results from a ROSAT PSPC Observation of IC 2391. *Brian M. Patten & Theodore Simon.* 415, L123, 200-D1 (1993)

GALAXY: STELLAR CONTENT

A Search for Pulsars at High Galactic Latitudes. *S. E. Thorsett, W. T. S. Deich, S. R. Kulkarni, J. Navarro, & G. Vasishth.* 416, 182, 203-C10 (1993)

GALAXY: STRUCTURE

Diffuse Gamma-Ray Emission in the Galactic Plane from Cosmic-Ray, Matter, and Photon Interactions. *D. L. Bertsch, T. M. Dame, C. E. Fichtel, S. D. Hunter, P. Sreekumar, J. G. Stacy, & P. Thaddeus.* 416, 587, 210-F6 (1993)

GAMMA RAYS: BURSTS

Searching Gamma-Ray Bursts for Gravitational Lensing Echoes: Implications for Compact Dark Matter. *R. J. Nemiroff, J. P. Norris, W. A. D. T. Wickramasinghe, J. M. Horack, C. Kouveliotou, G. J. Fishman, C. A. Meegan, R. B. Wilson, & W. S. Paciesas.* 414, 36, 170-E1 (1993)

A Semi-Analytic Model for Cyclotron Line Formation. *J. C. L. Wang, I. Wasserman, & D. Q. Lamb.* 414, 815, 181-D2 (1993)

Do Observations Exclude Gamma-Ray Bursts Originating in the Oort Cloud of Comets? *Eyal Maoz.* 414, 877, 182-B12 (1993)

Focusing of Alfvénic Wave Power in the Context of Gamma-Ray Burst Emissivity. *Marco Fatuzzo & Fulvio Melia.* 414, L89, 185-F7 (1993)

Gasdynamics of Relativistically Expanding Gamma-Ray Burst Sources: Kinematics, Energetics, Magnetic Fields, and Efficiency. *P. Mészáros, P. Laguna, & M. J. Rees.* 415, 181, 187-C7 (1993)

Gamma-Ray Bursts as a Probe of Large-Scale Structure in the Universe. *D. Q. Lamb & Jean M. Quashnock.* 415, L1, 191-E8 (1993)

A Classical Gamma-Ray Burst Repeater, GBS 0855-00? *V. C. Wang & R. E. Lingenfelter.* 416, L13, 207-C5 (1993)

GAMMA RAYS: OBSERVATIONS

Observation of High-Energy Gamma Rays from the Quasi-stellar Object CTA 102. *P. L. Nolan, D. L. Bertsch, C. E. Fichtel, R. C. Hartman, S. D. Hunter, G. Kanbach, D. A. Kniffen, Y. C. Lin,*

J. R. Mattox, H. A. Mayer-Hasselwander, P. F. Michelson, C. von Montigny, E. Schneid, P. Sreekumar, & D. J. Thompson. 414, 82, 171-A13 (1993)

Compton-backscattered Annihilation Radiation from the Galactic Center Region. *D. M. Smith, R. P. Lin, P. Feffer, S. Slassi, K. Hurley, J. Matteson, H. B. Bowman, R. M. Pelling, M. Briggs, D. Gruber, L. E. Peterson, R. E. Lingenfelter, P. von Ballmoos, I. Malet, M. Niel, G. Vedrenne, P. Durouchoux, P. Wallyn, C. Chapuis, C. Cork, D. Landis, P. Luke, N. Madden, D. Malone, & R. Pehl.* 414, 165, 172-B1 (1993)

How Many Positron Sources in the Galactic Center Region? *P. Wallyn & Ph. Durouchoux.* 414, 178, 172-C2 (1993)

Soft X-Ray Properties of the Geminga Pulsar. *J. P. Halpern & M. Ruderman.* 415, 286, 188-E8 (1993)

EGRET Observations of Active Galactic Nuclei: 0836+710, 0454-234, 0804+499, 0906+430, 1510-089, and 2356+196. *D. J. Thompson, D. L. Bertsch, B. L. Dingus, C. E. Fichtel, R. C. Hartman, S. D. Hunter, G. Kanbach, D. A. Kniffen, Y. C. Lin, J. R. Mattox, H. A. Mayer-Hasselwander, P. F. Michelson, C. von Montigny, P. L. Nolan, E. J. Schneid, & P. Sreekumar.* 415, L13, 191-F13 (1993)

Diffuse Gamma-Ray Emission in the Galactic Plane from Cosmic-Ray, Matter, and Photon Interactions. *D. L. Bertsch, T. M. Dame, C. E. Fichtel, S. D. Hunter, P. Sreekumar, J. G. Stacy, & P. Thaddeus.* 416, 587, 210-F6 (1993)

SMM Observations of Gamma-Ray Transients. I. A Search for Variable Emission at MeV Energies from Five Galactic and Extragalactic Sources. *M. J. Harris, G. H. Share, M. D. Leising, & J. E. Grove.* 416, 601, 210-G8 (1993)

EGRET Limits on High-Energy Gamma-Ray Emission from X-Ray- and Low-Energy Gamma-Ray-selected Seyfert Galaxies. *Y. C. Lin, D. L. Bertsch, B. L. Dingus, C. E. Fichtel, R. C. Hartman, S. D. Hunter, G. Kanbach, D. A. Kniffen, J. R. Mattox, H. A. Mayer-Hasselwander, P. F. Michelson, C. von Montigny, P. L. Nolan, E. Schneid, P. Sreekumar, & D. J. Thompson.* 416, L53, 216-B11 (1993)

OSSE Observations of the Bright Seyfert 1 Galaxy IC 4329A. *A. C. Fabian, K. Nandra, A. Celotti, M. J. Rees, J. E. Grove, & W. N. Johnson.* 416, L57, 216-C1 (1993)

GAMMA RAYS: THEORY

On ^{26}Al and Other Short-lived Interstellar Radioactivity. *Donald D. Clayton, Dieter H. Hartmann, & Mark D. Leising.* 415, L25, 192-A1 (1993)

New Upper Limits on Intergalactic Infrared Radiation from High-Energy Astrophysics. *F. W. Stecker & O. C. De Jager.* 415, L71, 199-E1 (1993)

Compton Backscattered Annihilation Radiation and the Mass of Nova Muscae. *Xin-Min Hua & Richard E. Lingenfelter.* 416, L17, 207-C11 (1993)

Model for the High-Energy Emission from Blazars. *Charles D. Dermer & Reinhard Schlickeiser.* 416, 458, 209-A11 (1993)

OSSE Observations of the Bright Seyfert 1 Galaxy IC 4329A. *A. C. Fabian, K. Nandra, A. Celotti, M. J. Rees, J. E. Grove, & W. N. Johnson.* 416, L57, 216-C1 (1993)

GRAVITATION

Improving the Reconstruction of the Velocity Potential and Primordial Density Fluctuations by Choice of Smoothing Windows. *Adrian L. Melott.* 414, L73, 185-D8 (1993)

The Einsteinian Gravitational Field of the Rigidly Rotating Disk of Dust. *G. Neugebauer & R. Meinel.* 414, L97, 185-G5 (1993)

Null Geodesics in Perturbed Spacetimes. *Ted Pyne & Mark Birkinshaw.* 415, 459, 193-E7 (1993)

HYDRODYNAMICS

A Cosmological Hydrodynamic Code Based on the Total Variation Diminishing Scheme. *Dongsu Ryu, Jeremiah P. Ostriker, Hyesung Kang, & Renyue Cen.* 414, 1, 170-B1 (1993)

A Hydrodynamic Treatment of the Tilted Cold Dark Matter Cosmological Scenario. *Renyue Cen & Jeremiah P. Ostriker.* 414, 407, 176-C1 (1993)

Effects of Gas on the Global Stability of Galactic Disks: Radial Flows. *Isaac Shlosman & Masafumi Noguchi.* 414, 474, 177-B2 (1993)

Continuum Hydrodynamical Equations for Multiphase Astrophysical Flows. *S. Pistinner & G. Shaviv.* 414, 612, 178-G5 (1993)

- A Hydrodynamical Model for the Explosion of a Neutron Star Just below the Minimum Mass. *Monica Colpi, Stuart L. Shapiro, & Saul A. Teukolsky.* 414, 717, 180-B10 (1993)
- Equidistribution of Energy and Other Quantities in Oscillating Systems. *Charles L. Wolff.* 414, 892, 182-D4 (1993)
- Gasdynamics of Relativistically Expanding Gamma-Ray Burst Sources: Kinematics, Energetics, Magnetic Fields, and Efficiency. *P. Mészáros, P. Laguna, & M. J. Rees.* 415, 181, 187-C7 (1993)
- Convection above the Neutrinosphere in Type II Supernovae. *D. S. Miller, J. R. Wilson, & R. W. Mayle.* 415, 278, 188-D12 (1993)
- A Hydrodynamic Approach to Cosmology: The Primeval Baryon Isocurvature Model. *Renyue Cen, Jeremiah P. Ostriker, & P. J. E. Peebles.* 415, 423, 193-B5 (1993)
- Gravitational Collapse of an Isothermal Sphere. *Prudence N. Foster & Roger A. Chevalier.* 416, 303, 204-G8 (1993)
- A Hydrodynamic Approach to Cosmology: Nonlinear Effects on Cosmic Backgrounds in the Cold Dark Matter Model. *Roberto Scaramella, Renyue Cen, & Jeremiah P. Ostriker.* 416, 399, 208-B9 (1993)
- Structure and Circulation of Self-gravitating Toroids. *Yoshiharu Eriguchi & Ewald Müller.* 416, 666, 211-F6 (1993)
- On the Angular Momentum Transport Associated with Convective Eddies in Accretion Disks. *W. Kley, J. C. B. Papaloizou, & D. N. C. Lin.* 416, 679, 211-G7 (1993)
- On the Nonaxisymmetric Convective Instabilities in Accretion Disks. *D. N. C. Lin, J. C. B. Papaloizou, & W. Kley.* 416, 689, 212-A4 (1993)
- Gravitational Radiation from Nonaxisymmetric Collisions of Neutron Stars. *Joan M. Centrella & Stephen L. W. McMillan.* 416, 719, 212-C10 (1993)
- Simulation of Compressible Convection: A Comparative Study of Boundary Conditions. *Murshed Hossain & D. J. Mullan.* 416, 733, 212-E1 (1993)
- A Theory of Supernova Explosions. *Adam Burrows & John Goshy.* 416, 175, 216-E1 (1993)
- INFRARED: GALAXIES**
- The Genesis of Starbursts and Infrared Emission in the Centers of Galaxies. *C. M. Telesco, L. L. Dressel, & R. D. Wolstencroft.* 414, 120, 171-E3 (1993)
- Optical Lines in High-Redshift Quasi-stellar Objects: Balmer Lines, [O III], and Fe II. *Gary J. Hill, Keith L. Thompson, & Richard Elston.* 414, L1, 175-C1 (1993)
- Molecular Gas Mass and Far-Infrared Emission from Distant Luminous Galaxies. *D. Downes, P. M. Solomon, & S. J. E. Radford.* 414, L13, 175-D6 (1993)
- Strong [Fe II] Emission from NGC 1275. *Richard J. Rudy, Ross D. Cohen, George S. Rossano, Peter Erwin, R. C. Puetter, Matthew A. Greenhouse, & Charles E. Woodward.* 414, 527, 177-F13 (1993)
- Millimeter and Submillimeter Continuum Emission from Early-Type Galaxies. *Michel Fich & Paul Hodge.* 415, 75, 186-A1 (1993)
- A Physical Model of the Infrared-to-Radio Correlation in Galaxies. *G. Helou & M. D. Bica.* 415, 93, 186-B9 (1993)
- Galaxy Number Counts from $K = 10$ to $K = 23$. *J. P. Gardner, L. L. Cowie, & R. J. Wainscoat.* 415, L9, 191-F7 (1993)

INFRARED: GENERAL

- New Upper Limits on Intergalactic Infrared Radiation from High-Energy Astrophysics. *F. W. Stecker & O. C. De Jager.* 415, L71, 199-E1 (1993)

INFRARED: INTERSTELLAR: CONTINUUM

- An IRAS Sample from Co-added Images of L1641. *H. Chen, A. T. Tokunaga, & Y. Fukui.* 416, 235, 204-A4 (1993)

INFRARED: INTERSTELLAR: LINES

- Infrared Frequencies and Intensities for Astrophysically Important Polycyclic Aromatic Hydrocarbon Cations. *Jan Szczepanski & Martin Vala.* 414, 646, 179-C4 (1993)
- Rotational Frequencies of Transition Metal Hydrides for Astrophysical Searches in the Far-Infrared. *John M. Brown, Stuart P. Beaton, & Kenneth M. Evenson.* 414, L125, 186-C6 (1993)
- Theoretical Modeling of the Infrared Fluorescence from Interstellar Polycyclic Aromatic Hydrocarbons. *W. A. Schutte, A. G. G. M. Tielens, & L. J. Allamandola.* 415, 397, 189-G12 (1993)

INFRARED: STARS

- IRS 16: The Galaxy's Central Wimp? *Peter Tambllyn & G. H. Rieke.* 414, 573, 178-D1 (1993)
- The Contribution of Disks and Envelopes to the Millimeter Continuum Emission from Very Young Low-Mass Stars. *S. Terebey, C. J. Chandler, & P. André.* 414, 759, 180-F6 (1993)
- The Embedded Young Stars in the Taurus-Auriga Molecular Cloud. II. Models for Scattered Light Images. *Scott J. Kenyon, Barbara A. Whitney, Mercedes Gomez, & Lee Hartmann.* 414, 773, 180-G9 (1993)
- Submillimeter Studies of Main-Sequence Stars. *B. Zuckerman & E. E. Becklin.* 414, 793, 181-B4 (1993)
- Infrared Spectra of Transition Objects and the Composition and Evolution of Carbon Dust. *R. H. Buss, Jr., A. G. G. M. Tielens, M. Cohen, M. W. Werner, J. D. Bregman, & F. C. Witteborn.* 415, 250, 188-B3 (1993)
- Evidence for Hydrated Silicates toward SN 1987A. *Ralf Timmermann & Harold P. Larson.* 415, 820, 198-A13 (1993)

INSTABILITIES

- Formation of Quasar Clouds by Thermal Instability in the Presence of Alfvén Wave Heating. *D. R. Gonçalves, V. Jatenco-Pereira, & R. Opher.* 414, 57, 170-F12 (1993)
- Radiative Instability in Synchrotron-emitting Plasmas. *P. Rossi, G. Bodo, S. Massaglia, & A. Ferrari.* 414, 112, 171-D7 (1993)
- Three-dimensional Magnetohydrodynamics of the Emerging Magnetic Flux in the Solar Atmosphere. *R. Matsumoto, T. Tajima, K. Shibata, & M. Katsiis.* 414, 357, 174-D8 (1993)
- A Hydrodynamical Model for the Explosion of a Neutron Star Just below the Minimum Mass. *Monica Colpi, Stuart L. Shapiro, & Saul A. Teukolsky.* 414, 717, 180-B10 (1993)

INSTRUMENTATION: DETECTORS

- In-Flight Performance and Preliminary Results from the Far Ultraviolet Space Telescope (Faust) Flown on ATLAS-1. *Stuart Bowyer, Timothy P. Sasseen, Michael Lampton, & Xiaoyi Wu.* 415, 875, 198-G12 (1993)

INTERPLANETARY MEDIUM

- Proximity Effects in Clusters of Particles. *François Rouleau & P. G. Marini.* 416, 707, 212-B10 (1993)
- Evaluation of Emission Mechanisms at ω_p , Using *Ulysses* Observations of Type III Bursts. *G. Thejappa, D. Lengyel-Frey, R. G. Stone, & M. L. Goldstein.* 416, 831, 213-G1 (1993)

ISM: ABUNDANCES

- Density, Temperature, and Isotopic Abundance in Molecular Gas around ζ Ophiuchi. *Harvey S. Liszt.* 414, 242, 173-A10 (1993)
- Comparison of Distributed Reacceleration and Leaky-Box Models of Cosmic-Ray Abundances ($3 \leq Z \leq 28$). *John R. Letaw, Rein Silberberg, & C. H. Tsao.* 414, 601, 178-F6 (1993)
- The O^{++}/H^{+} Abundance Ratio in Gaseous Nebulae Derived from Recombination Lines. *M. Peimbert, P. J. Storey, & S. Torres-Peimbert.* 414, 626, 179-A7 (1993)
- Detection of Interstellar $^{12}C^{15}N$. *A. H. Saleck, R. Simon, N. Schneider, & G. Winnewisser.* 414, L133, 186-D3 (1993)
- Oscillator Strengths of the Si II 181 Nanometer Resonance Multiplet. *S. D. Bergeson & J. E. Lawler.* 414, L137, 186-D9 (1993)
- Bright Planetary Nebulae as Probes of Chemical Evolution. *Michael G. Richer.* 415, 240, 188-A6 (1993)
- On ^{26}Al and Other Short-lived Interstellar Radioactivity. *Donald D. Clayton, Dieter H. Hartmann, & Mark D. Leising.* 415, L25, 192-A1 (1993)
- Forbidden Velocity Gas Detected in Ultraviolet Interstellar Absorption toward Four Distant Inner Galaxy Stars. *Todd M. Tripp, Kenneth R. Sembach, & Blair D. Savage.* 415, 652, 196-A1 (1993)
- The Detection of [C I] in Molecular Outflows Associated with Young Stellar Objects. *Christopher K. Walker, Gopal Narayanan, Thomas H. Büntenbach, John E. Carlstrom, Jocelyn Keene, & T. G. Phillips.* 415, 672, 196-B10 (1993)
- Faint Object Spectrograph Spectra of the Broad Fe II Absorption Lines in the Remnant of SN 1006. *Chi-Chao Wu, D. Michael Crenshaw, Robert A. Fesen, Andrew J. S. Hamilton, & Craig L. Sarazin.* 416, 247, 204-B7 (1993)

Ultraviolet Transitions of Low Condensation Temperature Heavy Elements and New Data for Interstellar Arsenic, Selenium, Tellurium, and Lead. *Jason A. Cardelli, S. R. Federman, David L. Lambert, & C. E. Theodosiou.* 416, L41, 207-F5 (1993)

Detection of the Interstellar NH_2 Radical. *Ewine F. van Dishoeck, David J. Jansen, Peter Schilke, & T. G. Phillips.* 416, L83, 216-E10 (1993)

Bistability in Dark Cloud Chemistry. *J. Le Bourlot, G. Pineau des Forêts, E. Roueff, & P. Schilke.* 416, L87, 216-F1 (1993)

ISM: ATOMS

Oscillator Strengths of the Si II 181 Nanometer Resonance Multiplet. *S. D. Bergeson & J. E. Lawler.* 414, L137, 186-D9 (1993)

Ultraviolet Transitions of Low Condensation Temperature Heavy Elements and New Data for Interstellar Arsenic, Selenium, Tellurium, and Lead. *Jason A. Cardelli, S. R. Federman, David L. Lambert, & C. E. Theodosiou.* 416, L41, 207-F5 (1993)

ISM: CLOUDS

A High-Resolution H I Survey of the Rosette Nebula. *Thomas A. Kuchar & T. M. Bania.* 414, 664, 179-D12 (1993)

The Embedded Young Stars in the Taurus-Auriga Molecular Cloud. I. Models for Spectral Energy Distributions. *Scott J. Kenyon, Nuria Calvet, & Lee Hartmann.* 414, 676, 179-F1 (1993)

Ambipolar Diffusion and Star Formation: Formation and Contraction of Axisymmetric Cloud Cores. II. Results. *Robert A. Fiedler & Telemachos Ch. Mouschovias.* 415, 680, 196-C7 (1993)

^{13}CO and C^{18}O Maps of N-Body Magnetohydrodynamic Simulations of Dark Clouds. *Lars G. Stenholm & Ralph E. Pudritz.* 416, 218, 203-F13 (1993)

A Determination of the Distance to the High-Velocity Cloud Complex M. *Laura Danly, C. E. Albert, & K. D. Kuntz.* 416, L29, 207-D13 (1993)

ISM: COSMIC RAYS

Comparison of Distributed Reacceleration and Leaky-Box Models of Cosmic-Ray Abundances ($3 < Z < 28$). *John R. Letaw, Rein Silberberg, & C. H. Tsao.* 414, 601, 178-F6 (1993)

Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun. *M. Amenomori, Z. Cao, L. K. Ding, Z. Y. Feng, K. Hibino, N. Hotta, Q. Huang, A. X. Huo, H. G. Jia, G. Z. Jiang, S. Q. Jiao, F. Kajino, K. Kasahara, Labaciren, D. M. Mei, L. Meng, X. R. Meng, Mimaciren, K. Mizutani, J. Mu, H. Nanjo, M. Nishizawa, Nusang, A. Oguro, M. Ohnishi, I. Ohta, T. Ouchi, J. R. Ren, T. Saito, M. Sakata, Z. Z. Shi, M. Shibata, T. Shirai, H. Sugimoto, X. X. Sun, K. Taira, Y. H. Tan, N. Tateyama, S. Torii, H. Wang, C. Z. Wen, Y. Yamamoto, X. Y. Yao, G. C. Yu, P. Yuan, T. Yuda, J. G. Zeng, C. S. Zhang, H. M. Zhang, L. Zhang, Zhasang, Zhaxiciren, & W. D. Zhou (The Tibet AS γ Collaboration).* 415, L147, 200-G1 (1993)

The Crab Nebula's Cosmic-Ray Acceleration Zone Revealed. *P. P. Kronberg, H. Lesch, P. F. Ortiz, & M. F. Bietenholz.* 416, 251, 204-B13 (1993)

Diffuse Gamma-Ray Emission in the Galactic Plane from Cosmic-Ray, Matter, and Photon Interactions. *D. L. Bertsch, T. M. Dame, C. E. Fichtel, S. D. Hunter, P. Sreekumar, J. G. Stacy, & P. Thaddeus.* 416, 587, 210-F6 (1993)

ISM: DUST, EXTINCTION

Calcium Depletion in Cooling-Flow Nebulae and the Origin of the Line-emitting Gas. *Megan Donahue & G. Mark Voit.* 414, L17, 175-D11 (1993)

What Is New about the New Comet Yanaka (1988r)? *J. Mayo Greenberg, P. D. Singh, & A. A. de Almeida.* 414, L45, 175-G7 (1993)

Hubble Space Telescope Ultraviolet Spectroscopy of the Highly Polarized but Quiescent Quasar OI 287. *Robert Antonucci, Anne L. Kinney, & Todd Hurt.* 414, 506, 177-E1 (1993)

Effects of Internal Dust on the Narrow-Line Region Lyman and Balmer Decrements. *Luc Binette, John Wang, Montserrat Villar-Martin, Peter G. Martin, & Gladis Magris C.* 414, 535, 177-G9 (1993)

On Graphite and the 2175 Å Extinction Profile. *B. T. Draine & Sangeeta Malhotra.* 414, 632, 179-B1 (1993)

Submillimeter Studies of Main-Sequence Stars. *B. Zuckerman & E. E. Becklin.* 414, 793, 181-B4 (1993)

A New Method to Calculate the Extinction Properties of Irregularly Shaped Particles. *François Rouleau & P. G. Marin.* 414, 803, 181-C2 (1993)

Millimeter and Submillimeter Continuum Emission from Early-Type Galaxies. *Michel Fich & Paul Hodge.* 415, 75, 186-A1 (1993)

Infrared Spectra of Transition Objects and the Composition and Evolution of Carbon Dust. *R. H. Buss, Jr., A. G. G. M. Tielens, M. Cohen, M. W. Werner, J. D. Bregman, & F. C. Witteborn.* 415, 250, 188-B3 (1993)

Activation of Extended Red Emission Photoluminescence in Carbon Solids by Exposure to Atomic Hydrogen and UV Radiation. *Douglas G. Furon & Adolf N. Witt.* 415, L51, 192-D1 (1993)

Evidence for Hydrated Silicates toward SN 1987A. *Ralf Timmermann & Harold P. Larson.* 415, 820, 198-A13 (1993)

Proximity Effects in Clusters of Particles. *François Rouleau & P. G. Marin.* 416, 707, 212-B10 (1993)

Circumstellar Properties of S Stars. I. Dust Features. *P. S. Chen & Sun Kwok.* 416, 769, 213-A1 (1993)

ISM: GENERAL

On Graphite and the 2175 Å Extinction Profile. *B. T. Draine & Sangeeta Malhotra.* 414, 632, 179-B1 (1993)

Arecibo Observation of B2 0902+343 in the 21 Centimeter Line at Redshift 3.4. *F. H. Briggs, E. Sorar, & A. Taramopoulos.* 415, L99, 200-A2 (1993)

ISM: H II REGIONS

Hidden Supernova Remnants in the Large Magellanic Cloud H II Complex N44. *You-Hua Chu, Mordecai-Mark Mac Low, Guillermo Garcia-Segura, Bart Wakker, & Robert C. Kennicutt, Jr.* 414, 213, 172-F2 (1993)

Continuum Hydrodynamical Equations for Multiphase Astrophysical Flows. *S. Pistinner & G. Shaviv.* 414, 612, 178-G5 (1993)

The $\text{O}^{++}/\text{H}^{+}$ Abundance Ratio in Gaseous Nebulae Derived from Recombination Lines. *M. Peimbert, P. J. Storey, & S. Torres-Peimbert.* 414, 626, 179-A7 (1993)

Bright Planetary Nebulae as Probes of Chemical Evolution. *Michael G. Richer.* 415, 240, 188-A6 (1993)

A Cold H II Region in the Molecular Globule G70.7+1.2. *J. A. Phillips, J. S. Onello, & S. R. Kulkarni.* 415, L143, 200-F8 (1993)

ISM: INDIVIDUAL

Name: Chamaeleon I

ROSAT X-Ray Study of the Chamaeleon I Dark Cloud. I. The Stellar Population. *Eric D. Feigelson, Sophie Casanova, Thierry Montmerle, & Jean Guibert.* 416, 623, 211-B8 (1993)

Name: Crab Nebula

Alfvénic Fluctuations in a Relativistic Wind with a Spiral Magnetic Field and Random Magnetic Field Structures in the Crab Nebula. *Yu-Qing Lou.* 414, 656, 179-D2 (1993)

The Crab Nebula's Cosmic-Ray Acceleration Zone Revealed. *P. P. Kronberg, H. Lesch, P. F. Ortiz, & M. F. Bietenholz.* 416, 251, 204-B13 (1993)

Name: HVC Complex M

A Determination of the Distance to the High-Velocity Cloud Complex M. *Laura Danly, C. E. Albert, & K. D. Kuntz.* 416, L29, 207-D13 (1993)

Name: Rosette Nebula

A High-Resolution H I Survey of the Rosette Nebula. *Thomas A. Kuchar & T. M. Bania.* 414, 664, 179-D12 (1993)

Name: Sagittarius B2

Detection of the Interstellar NH_2 Radical. *Ewine F. van Dishoeck, David J. Jansen, Peter Schilke, & T. G. Phillips.* 416, L83, 216-E10 (1993)

NGC Number: NGC 1316

Planetary Nebulae as Standard Candles. IX. The Distance to the Fornax Cluster. *Russet McMillan, Robin Ciardullo, & George H. Jacoby.* 416, 62, 201-G7 (1993)

NGC Number: NGC 1399

Planetary Nebulae as Standard Candles. IX. The Distance to the Fornax Cluster. *Russet McMillan, Robin Ciardullo, & George H. Jacoby.* 416, 62, 201-G7 (1993)

NGC Number: NGC 1404

Planetary Nebulae as Standard Candles. IX. The Distance to the Fornax Cluster. *Russet McMillan, Robin Ciardullo, & George H. Jacoby.* 416, 62, 201-G7 (1993)

NGC Number: NGC 7027

The Radiative Association of He⁺ and He and H⁺ and H. P. C. Stancil, J. F. Babb, & A. Dalgarno. 414, 672, 179-E8 (1993)

Alphanumeric: G1.6-0.025

Refrigeration of the 18.3 GHz C₃H₂ Transition in Dark Cloud G1.6-0.25. T. B. H. Kuiper, J. B. Whiteoak, R.-S. Peng, W. L. Peters III, & J. E. Reynolds. 416, L33, 207-E7 (1993)

Alphanumeric: G318.9+0.4

Further Observations of the Peculiar Galactic Radio Source G318.9+0.4. *Jonathan B. Z. Whiteoak.* 415, 701, 196-E3 (1993)

Alphanumeric: IRAS 03282+3035

Shear in the IRAS 3282 Outflow. M. Tafalla, R. Bachiller, J. Martín-Pintado, & M. C. H. Wright. 415, L139, 200-F1 (1993)

Alphanumeric: L1641

An IRAS Sample from Co-added Images of L1641. H. Chen, A. T. Tokunaga, & Y. Fukui. 416, 235, 204-A4 (1993)

Alphanumeric: LMC N132D

High-Resolution X-Ray Spectroscopy of the Supernova Remnant N132D. *Una Hwang, John P. Hughes, Claude R. Canizares, & Thomas H. Markert.* 414, 219, 172-F11 (1993)

Alphanumeric: SN 1006

Faint Object Spectrograph Spectra of the Broad Fe II Absorption Lines in the Remnant of SN 1006. *Chi-Chao Wu, D. Michael Crenshaw, Robert A. Fesen, Andrew J. S. Hamilton, & Craig L. Sarazin.* 416, 247, 204-B7 (1993)

ISM: JETS AND OUTFLOWS

Properties of Jet-driven Molecular Outflows. *Colin R. Masson & Lawrence M. Chernin.* 414, 230, 172-G10 (1993)

The Small-Scale Structure and Kinematics of B335. *Claire J. Chandler & Anneila I. Sargent.* 414, L29, 175-E13 (1993)

Continuum Hydrodynamical Equations for Multiphase Astrophysical Flows. *S. Pistinner & G. Shaviv.* 414, 612, 178-G5 (1993)

The Triple Radio Continuum Source in Serpens: The Birth of a Herbig-Haro System? *S. Curiel, L. F. Rodríguez, J. M. Moran, & J. Cantó.* 415, 191, 187-D5 (1993)

Molecular Line Emission Models of Herbig-Haro Objects. II. HCO⁺ Emission. *Mark G. Wolfire & Arieh Königl.* 415, 204, 187-E6 (1993)

The Detection of [C I] in Molecular Outflows Associated with Young Stellar Objects. *Christopher K. Walker, Gopal Narayanan, Thomas H. Büttgenbach, John E. Carlstrom, Jocelyn Keene, & T. G. Phillips.* 415, 672, 196-B10 (1993)

Kinematical Evidence for a Rotating, Episodic Jet in the Planetary Nebula Fleming 1. *J. A. Lopez, J. Meaburn, & J. W. Palmer.* 415, L135, 200-E8 (1993)

Shear in the IRAS 3282 Outflow. *M. Tafalla, R. Bachiller, J. Martín-Pintado, & M. C. H. Wright.* 415, L139, 200-F1 (1993)

HH 80-81: A Highly Collimated Herbig-Haro Complex Powered by a Massive Young Star. *J. Martí, L. F. Rodríguez, & B. Reipurth.* 416, 208, 203-F1 (1993)

An IRAS Sample from Co-added Images of L1641. *H. Chen, A. T. Tokunaga, & Y. Fukui.* 416, 235, 204-A4 (1993)

Ultraviolet Spectroscopy of Herbig-Haro Objects: Spatial Structure, Spectroscopic Diagnostics, and Variability. *K.-H. Böhm, A. Noriega-Crespo, & J. Solf.* 416, 647, 211-D11 (1993)

ISM: KINEMATICS AND DYNAMICS

Observations of Entrainment and Time Variability in the HH 47 Jet. *Patrick Hartigan, Jon A. Morse, Steve Heathcote, & Gerald Cecil.* 414, L121, 186-B11 (1993)

High Spatial Resolution Observations of CO in CRL 618. *Katsunori M. Shibata, Shuji Deguchi, Naomi Hirano, Osamu Kameya, & Shin'ichi Tamura.* 415, 708, 196-F1 (1993)

Shear in the IRAS 3282 Outflow. *M. Tafalla, R. Bachiller, J. Martín-Pintado, & M. C. H. Wright.* 415, L139, 200-F1 (1993)

¹³CO and C¹⁸O Maps of N-Body Magnetohydrodynamic Simulations of Dark Clouds. *Lars G. Stenholm & Ralph E. Pudritz.* 416, 218, 203-F13 (1993)

ISM: MAGNETIC FIELDS

Ambipolar Diffusion and Star Formation: Formation and Contraction of Axisymmetric Cloud Cores. II. Results. *Robert A. Fiedler & Telemachos Ch. Mouschovias.* 415, 680, 196-C7 (1993)

ISM: MOLECULES

Kiloparsec-Scale Molecular Gas Excitation in Spiral Galaxies. *W. F. Wall, D. T. Jaffe, F. N. Bash, F. P. Israel, P. R. Maloney, & F. Baas.* 414, 98, 171-C5 (1993)

Properties of Jet-driven Molecular Outflows. *Colin R. Masson & Lawrence M. Chernin.* 414, 230, 172-G10 (1993)

Density, Temperature, and Isotopic Abundance in Molecular Gas around ζ Ophiuchi. *Harvey S. Liszt.* 414, 242, 173-A10 (1993)

What Is New about the New Comet Yanaka (1988r)? *J. Mayo Greenberg, P. D. Singh, & A. A. de Almeida.* 414, L45, 175-G7 (1993)

Infrared Frequencies and Intensities for Astrophysically Important Polycyclic Aromatic Hydrocarbon Cations. *Jan Szczepanski & Martin Vala.* 414, 646, 179-C4 (1993)

Rotational Frequencies of Transition Metal Hydrides for Astrophysical Searches in the Far-Infrared. *John M. Brown, Stuart P. Beaton, & Kenneth M. Evenson.* 414, L125, 186-C6 (1993)

The Millimeter-Wave Spectrum of AlOH. *A. J. Apponi, W. L. Barclay, Jr., & L. M. Ziurys.* 414, L129, 186-C11 (1993)

Detection of Interstellar ¹²C¹⁵N. *A. H. Saleck, R. Simon, N. Schneider, & G. Winnewisser.* 414, L133, 186-D3 (1993)

Formaldehyde Emission in Galaxies. *Willem A. Baan, Aubrey D. Haschick, & Robert Uglesich.* 415, 140, 186-G1 (1993)

Theoretical Modeling of the Infrared Fluorescence from Interstellar Polycyclic Aromatic Hydrocarbons. *W. A. Schutte, A. G. G. M. Tielens, & L. J. Allamandola.* 415, 397, 189-G12 (1993)

The C¹⁸O Ratio Problem: A Possible New Precision Test of the Decaying Neutrino Theory. *D. W. Sciama.* 415, L31, 192-A8 (1993)

The Detection of [C I] in Molecular Outflows Associated with Young Stellar Objects. *Christopher K. Walker, Gopal Narayanan, Thomas H. Büttgenbach, John E. Carlstrom, Jocelyn Keene, & T. G. Phillips.* 415, 672, 196-B10 (1993)

CO Emission in the Radio-loud Quasar 3C 48. *N. Z. Scoville, S. Padin, D. B. Sanders, B. T. Soifer, & M. S. Yun.* 415, L75, 199-E7 (1993)

Ab Initio Rotational Constants of Isocyanopolynes. *Arturo Arnau, Estanislao Silla, & Iñaki Tuñón.* 415, L151, 200-G8 (1993)

¹³CO and C¹⁸O Maps of N-Body Magnetohydrodynamic Simulations of Dark Clouds. *Lars G. Stenholm & Ralph E. Pudritz.* 416, 218, 203-F13 (1993)

An IRAS Sample from Co-added Images of L1641. *H. Chen, A. T. Tokunaga, & Y. Fukui.* 416, 235, 204-A4 (1993)

Refrigeration of the 18.3 GHz C₃H₂ Transition in Dark Cloud G1.6-0.25. T. B. H. Kuiper, J. B. Whiteoak, R.-S. Peng, W. L. Peters III, & J. E. Reynolds. 416, L33, 207-E7 (1993)

Detection of the Interstellar NH₂ Radical. *Ewine F. van Dishoeck, David J. Jansen, Peter Schilke, & T. G. Phillips.* 416, L83, 216-E10 (1993)

Bistability in Dark Cloud Chemistry. *J. Le Boulart, G. Pineau des Forêts, E. Roueff, & P. Schilke.* 416, L87, 216-F1 (1993)

ISM: PLANETARY NEBULAE: GENERAL

The Radial Velocities of Planetary Nebulae in NGC 3379. *Robin Ciardullo, George H. Jacoby, & Herwig B. Dejonghe.* 414, 454, 176-G3 (1993)

The Planetary Nebula System and Dynamics of NGC 5128. I. Planetary Nebulae as Standard Candles. *Xiaohui Hui, Holland C. Ford, Robin Ciardullo, & George H. Jacoby.* 414, 463, 177-A1 (1993)

Bright Planetary Nebulae as Probes of Chemical Evolution. *Michael G. Richer.* 415, 240, 188-A6 (1993)

Infrared Spectra of Transition Objects and the Composition and Evolution of Carbon Dust. *R. H. Buss, Jr., A. G. G. M. Tielens, M. Cohen, M. W. Werner, J. D. Bregman, & F. C. Witteborn.* 415, 250, 188-B3 (1993)

Winds in Central Stars of Planetary Nebulae. *A. Modigliani, P. Patriarchi, & M. Perinotto.* 415, 258, 188-B12 (1993)

Planetary Nebulae as Standard Candles. IX. The Distance to the Fornax Cluster. *Russet McMillan, Robin Ciardullo, & George H. Jacoby.* 416, 62, 201-G7 (1993)

ISM: PLANETARY NEBULAE: INDIVIDUAL

Name: Abell 30

HST Imaging of Hydrogen-poor Ejecta in Abell 30 and Abell 78: Wind-blown Cometary Structures. *Kazimierz J. Borkowski, J. Patrick Harrington, Zlatan Tsvetanov, & Robin E. S. Clegg.* 415, L47, 192-C4 (1993)

Name: Abell 78

HST Imaging of Hydrogen-poor Ejecta in Abell 30 and Abell 78: Wind-blown Cometary Structures. *Kazimierz J. Borkowski, J. Patrick Harrington, Zlatan Tsvetanov, & Robin E. S. Clegg.* 415, L47, 192-C4 (1993)

Name: Fleming 1

Kinematical Evidence for a Rotating, Episodic Jet in the Planetary Nebula Fleming 1. *J. A. Lopez, J. Meaburn, & J. W. Palmer.* 415, L135, 200-E8 (1993)

NGC Number: NGC 6302

Detection of the Angular Expansion Rate and Determination of the Distance of the Planetary Nebula NGC 6302. *Yolanda Gómez, Luis F. Rodríguez, & James M. Moran.* 416, 620, 211-B1 (1993)

Alphanumeric: CRL 618

High Spatial Resolution Observations of CO in CRL 618. *Katsunori M. Shibata, Shuji Deguchi, Naomi Hirano, Osamu Kameya, & Shin'ichi Tamura.* 415, 708, 196-F1 (1993)

ISM: STRUCTURE

A Determination of the Distance to the High-Velocity Cloud Complex M. *Laura Danly, C. E. Albert, & K. D. Kuntz.* 416, L29, 207-D13 (1993)

ISM: SUPERNOVA REMNANTS

Hidden Supernova Remnants in the Large Magellanic Cloud II Complex N44. *You-Hua Chu, Mordecai-Mark Mac Low, Guillermo Garcia-Segura, Bart Wakker, & Robert C. Kennicutt, Jr.* 414, 213, 172-F2 (1993)

High-Resolution X-Ray Spectroscopy of the Supernova Remnant N132D. *Una Hwang, John P. Hughes, Claude R. Canizares, & Thomas H. Markert.* 414, 219, 172-F11 (1993)

Alfvénic Fluctuations in a Relativistic Wind with a Spiral Magnetic Field and Random Magnetic Field Structures in the Crab Nebula. *Yu-Qing Lou.* 414, 656, 179-D2 (1993)

X-Rays from SN 1986J: Emission of a Shocked Clumpy Wind. *N. N. Chugai.* 414, L101, 185-G10 (1993)

Further Observations of the Peculiar Galactic Radio Source G318.9+0.4. *Jonathan B. Z. Whiteoak.* 415, 701, 196-E3 (1993)

Associating Young Pulsars and Supernova Remnants: PSR 1610-50 and the Case for High-Velocity Pulsars. *Patrizia A. Caraveo.* 415, L111, 200-B6 (1993)

Faint Object Spectrograph Spectra of the Broad Fe II Absorption Lines in the Remnant of SN 1006. *Chi-Chao Wu, D. Michael Crenshaw, Robert A. Fesen, Andrew J. S. Hamilton, & Craig L. Sarazin.* 416, 247, 204-B7 (1993)

LINE: FORMATION

The "Baldwin Effect" in Wolf-Rayet Stars. *Patrick Morris, Peter S. Conti, Henny J. G. L. M. Lamers, & Gloria Koenigsberger.* 414, L25, 175-E7 (1993)

A Semi-Analytic Model for Cyclotron Line Formation. *J. C. L. Wang, I. Wasserman, & D. Q. Lamb.* 414, 815, 181-D2 (1993)

The X-Ray Spectra of Cluster Cooling Flows. I. Optically Thin Models. *Michael W. Wise & Craig L. Sarazin.* 415, 58, 185-F10 (1993)

The Relativistic Sobolev Method Applied to Homologously Expanding Atmospheres. *David J. Jeffery.* 415, 734, 197-A5 (1993)

Partially Coherent Scattering in Stellar Chromospheres. IV. Analytic Wing Approximations. *K. G. Gayley.* 415, 811, 198-A1 (1993)

Compton Backscattered Annihilation Radiation and the Mass of Nova Muscae. *Xin-Min Hua & Richard E. Lingenfelter.* 416, L17, 207-C11 (1993)

Refrigeration of the 18.3 GHz C₂H₂ Transition in Dark Cloud G1.6-0.25. *T. B. H. Kuiper, J. B. Whiteoak, R.-S. Peng, W. L. Peters III, & J. E. Reynolds.* 416, L33, 207-E7 (1993)

Semiempirical Flare Models with Chromospheric Condensation. *W. Q. Gan, E. Rieger, & C. Fang.* 416, 886, 214-D10 (1993)

LINE: IDENTIFICATION

Detection of [O III] λ 5007 Emission from the Io Plasma Torus. *Nicolas Thomas.* 414, L41, 175-G2 (1993)

Rotational Frequencies of Transition Metal Hydrides for Astrophysical Searches in the Far-Infrared. *John M. Brown, Stuart P. Beaton, & Kenneth M. Evenson.* 414, L125, 186-C6 (1993)

The Millimeter-Wave Spectrum of AIOH. *A. J. Apponi, W. L. Barclay, Jr., & L. M. Ziurys.* 414, L129, 186-C11 (1993)

Detection of Interstellar ¹²C¹⁵N. *A. H. Saleck, R. Simon, N. Schneider, & G. Winnewisser.* 414, L133, 186-D3 (1993)

Theoretical Modeling of the Infrared Fluorescence from Interstellar Polycyclic Aromatic Hydrocarbons. *W. A. Schutte, A. G. G. M. Tielens, & L. J. Allamandola.* 415, 397, 189-G12 (1993)

Ab Initio Rotational Constants of Isocyanopolynes. *Arturo Arnau, Estanislao Silla, & Iñaki Tuñón.* 415, L151, 200-G8 (1993)

The Spectrum of EZ Canis Majoris (HD 50896) to the Lyman Limit with the Hopkins Ultraviolet Telescope. *Stephan R. McCandliss, Richard H. Buss, Jr., William P. Blair, Charles W. Bowers, Arthur F. Davidsen, Paul D. Feldman, & Jeffrey W. Kruk.* 416, 372, 205-F3 (1993)

Detection of the Interstellar NH₂ Radical. *Ewine F. van Dishoeck, David J. Jansen, Peter Schilke, & T. G. Phillips.* 416, L83, 216-E10 (1993)

LINE: PROFILES

Statistics of QSO Broad Emission-Line Profiles. I. The C IV λ 1549 Line and the λ 1400 Feature. *Beverly J. Wills, M. S. Brotherton, D. Fang, Charles C. Steidel, & Wallace L. W. Sargent.* 415, 563, 194-G8 (1993)

¹³CO and C¹⁸O Maps of N-Body Magnetohydrodynamic Simulations of Dark Clouds. *Lars G. Stenholm & Ralph E. Pudritz.* 416, 218, 203-F13 (1993)

On the Interpretation of the Ultraviolet Spectra of Symbiotic Stars and Recurrent Novae. I. *Steven N. Shore & Jason P. Aufdenberg.* 416, 355, 205-D10 (1993)

MAGNETIC FIELDS

Magnetic Fields in the Hydra A Cluster. *Gregory B. Taylor & Richard A. Perley.* 416, 554, 210-C3 (1993)

Finite-Velocity Effects on Atoms in Strong Magnetic Fields and Implications for Neutron Star Atmospheres. *G. G. Pavlov & P. Mészáros.* 416, 752, 212-F8 (1993)

Electron Impact Broadening Parameters Predictions from Regularities: Fe I, Fe II, Fe III, Fe IV, C IV, and Si IV. *J. Purić, M. H. Miller, & A. Lesage.* 416, 825, 213-F7 (1993)

MAGNETOHYDRODYNAMICS: MHD

Three-dimensional Magnetohydrodynamics of the Emerging Magnetic Flux in the Solar Atmosphere. *R. Matsumoto, T. Tajima, K. Shibata, & M. Kaisig.* 414, 357, 174-D8 (1993)

Anomalous Resistivity and the Evolution of Magnetic Field Topology. *E. N. Parker.* 414, 389, 174-G5 (1993)

Alfvénic Fluctuations in a Relativistic Wind with a Spiral Magnetic Field and Random Magnetic Field Structures in the Crab Nebula. *Yu-Qing Lou.* 414, 656, 179-D2 (1993)

Long-Term Containment of Energetic Particles in Coronal Loops. *Yun-Tung Lau, Theodore G. Northrop, & John M. Finn.* 414, 908, 182-E10 (1993)

Focusing of Alfvénic Wave Power in the Context of Gamma-Ray Burst Emissivity. *Marco Fatuzzo & Fulvio Melia.* 414, L89, 185-F7 (1993)

Electromagnetically Driven Relativistic Jets: A Class of Self-consistent Numerical Solutions. *Zhi-Yun Li.* 415, 118, 186-E4 (1993)

Propagation of Hydrodynamic Waves in Optically Thin Plasmas. *Miguel H. Ibáñez S., & Orlando B. Escalona T.* 415, 335, 189-B7 (1993)

Ion Acceleration in Impulsive Solar Flares. *Jürgen Steinacker, Uwe Jaekel, & Reinhard Schlickeiser.* 415, 342, 189-C1 (1993)

Coronal Heating by the Resonant Absorption of Alfvén Waves: Importance of the Global Mode and Scaling Laws. *Richard S. Steinolfson & Joseph M. Davila.* 415, 354, 189-D1 (1993)

Ambipolar Diffusion and Star Formation: Formation and Contraction of Axisymmetric Cloud Cores. II. Results. *Robert A. Fiedler & Telemachos Ch. Mouschovias.* 415, 680, 196-C7 (1993)

- The Crab Nebula's Cosmic-Ray Acceleration Zone Revealed. *P. P. Kronberg, H. Lesch, P. F. Ortiz, & M. F. Bietenholz*. 416, 251, 204-B13 (1993)
- A Class of Three-dimensional Isothermal Laminated Equilibria and Their Stability. *Y. P. Chou, B. C. Low, & A. Bhattacharjee*. 416, 379, 205-F12 (1993)
- A Linear Solution for Magnetic Reconnection Driven by Converging or Diverging Footpoint Motions. *George Roumeliotis & Ronald L. Moore*. 416, 386, 205-G7 (1993)
- Magnetically Confined Plasma Columns with Helical Symmetry. *L. J. Palumbo & A. M. Platzek*. 416, 656, 211-E8 (1993)
- The Magnetohydrodynamics of Umbral Flux Tubes. II. Spectroscopic Properties. *Detlev Degenhardt & Bruce W. Lites*. 416, 875, 214-C11 (1993)
- MASERS**
- Polarization of Astronomical Maser Radiation. II. Polarization Modes and Unsaturated Growth. *Moshe Elitzur*. 416, 256, 204-C7 (1993)
- Discovery of Interstellar Water Lines at 437, 439, and 471 GHz: Strong Case for Water Maser Formation behind C-Type Shocks. *Gary J. Melnick, Karl M. Menten, Thomas G. Phillips, & Todd Hunter*. 416, L37, 207-E13 (1993)
- METHODS: ANALYTICAL**
- Equidistribution of Energy and Other Quantities in Oscillating Systems. *Charles L. Wolff*. 414, 892, 182-D4 (1993)
- METHODS: DATA ANALYSIS**
- Restoration of Astronomical Images by Iterative Blind Deconvolution. *Stuart M. Jefferies & Julian C. Christou*. 415, 862, 198-F9 (1993)
- METHODS: NUMERICAL**
- A Cosmological Hydrodynamic Code Based on the Total Variation Diminishing Scheme. *Dongsu Ryu, Jeremiah P. Ostriker, Hyesung Kang, & Renyue Cen*. 414, 1, 170-B1 (1993)
- An $O(N \log N)$ Integration Scheme for Collisional Stellar Systems. *Stephen L. W. McMillan & Sverre J. Aarseth*. 414, 200, 172-E1 (1993)
- Amplification of Cluster Correlations: The Effect of Sharp Clipping. *István Szapudi & Alexander S. Szalay*. 414, 493, 177-C12 (1993)
- Improving the Reconstruction of the Velocity Potential and Primordial Density Fluctuations by Choice of Smoothing Windows. *Adrian L. Melott*. 414, L73, 185-D8 (1993)
- On the Exponential Instability of N -Body Systems. *Jeremy Goodman, Douglas C. Heggie, & Piet Hut*. 415, 715, 196-F11 (1993)
- Structure Formation with Cold plus Hot Dark Matter. *Anatoly Klypin, Jon Holtzman, Joel Primack, & Enikő Regős*. 416, 1, 201-B1 (1993)
- Simulations of Compact Groups of Galaxies: The Effect of the Dark Matter Distribution. *Paul W. Bode, Haldan N. Cohn, & Phyllis M. Lugger*. 416, 17, 201-C5 (1993)
- Ballistic Models for Radio Jets in Colliding Galaxies: 3C 278 (NGC 4782/4783). *Kirk D. Borne & Luis Colina*. 416, 157, 203-A8 (1993)
- A Hydrodynamic Approach to Cosmology: Nonlinear Effects on Cosmic Backgrounds in the Cold Dark Matter Model. *Roberto Scaramella, Renyue Cen, & Jeremiah P. Ostriker*. 416, 399, 208-B9 (1993)
- Structure of Merger Remnants. III. Phase-Space Constraints. *Lars Hernquist, David N. Spergel, & Jeremy S. Heyl*. 416, 415, 208-E4 (1993)
- Smoothed Nonparametric Estimation of the Luminosity Function for Flux-limited Samples. *David Cadiz & Vahé Petrosian*. 416, 450, 209-A1 (1993)
- Structure Function Analysis of High Radio Frequency Variability in the Metsähovi Monitoring Sample of Active Galactic Nuclei. *M. Lainela & E. Valtaoja*. 416, 485, 209-C12 (1993)
- Using the Schrödinger Equation to Simulate Collisionless Matter. *Lawrence M. Widrow & Nick Kaiser*. 416, L71, 216-D6 (1993)
- METHODS: STATISTICAL**
- Can Extra Power Explain Periodicity on Large Scales? *Shan Luo & Ethan T. Vishniac*. 415, 450, 193-D9 (1993)
- MINOR PLANETS**
- Restoration of Astronomical Images by Iterative Blind Deconvolution. *Stuart M. Jefferies & Julian C. Christou*. 415, 862, 198-F9 (1993)
- MOLECULAR DATA**
- Infrared Frequencies and Intensities for Astrophysically Important Polycyclic Aromatic Hydrocarbon Cations. *Jan Szczepanski & Martin Vala*. 414, 646, 179-C4 (1993)
- Rotational Frequencies of Transition Metal Hydrides for Astrophysical Searches in the Far-Infrared. *John M. Brown, Stuart P. Beaton, & Kenneth M. Evenson*. 414, L125, 186-C6 (1993)
- The Millimeter-Wave Spectrum of AlOH . *A. J. Apponi, W. L. Barclay, Jr., & L. M. Ziurys*. 414, L129, 186-C11 (1993)
- Detection of Interstellar $^{12}\text{C}^{15}\text{N}$. *A. H. Saleck, R. Simon, N. Schneider, & G. Winnewisser*. 414, L133, 186-D3 (1993)
- MOLECULAR PROCESSES**
- Polycyclic Aromatic Hydrocarbons in the Atmospheres of Titan and Jupiter. *Carl Sagan, B. N. Khare, W. R. Thompson, G. D. McDonald, Michael R. Wing, Jeffrey L. Bada, Tuan Vo-Dinh, & E. T. Arakawa*. 414, 399, 175-A3 (1993)
- The Radiative Association of He^+ and He and H^+ and H . *P. C. Stancil, J. F. Babb, & A. Dalgarno*. 414, 672, 179-E8 (1993)
- Molecular Line Emission Models of Herbig-Haro Objects. II. HCO^+ Emission. *Mark G. Wolfire & Arieh Königl*. 415, 204, 187-E6 (1993)
- Theoretical Modeling of the Infrared Fluorescence from Interstellar Polycyclic Aromatic Hydrocarbons. *W. A. Schutte, A. G. G. M. Tielens, & L. J. Allamandola*. 415, 397, 189-G12 (1993)
- Polarization of Astronomical Maser Radiation. II. Polarization Modes and Unsaturated Growth. *Moshe Elitzur*. 416, 256, 204-C7 (1993)
- Refrigeration of the 18.3 GHz C_2H_2 Transition in Dark Cloud G1.6-0.25. *T. B. H. Kuiper, J. B. Whiteoak, R.-S. Peng, W. L. Peters III, & J. E. Reynolds*. 416, L33, 207-E7 (1993)
- Discovery of Interstellar Water Lines at 437, 439, and 471 GHz: Strong Case for Water Maser Formation behind C-Type Shocks. *Gary J. Melnick, Karl M. Menten, Thomas G. Phillips, & Todd Hunter*. 416, L37, 207-E13 (1993)
- Detection of the Interstellar NH_2 Radical. *Ewine F. van Dishoeck, David J. Jansen, Peter Schilke, & T. G. Phillips*. 416, L83, 216-E10 (1993)
- Bistability in Dark Cloud Chemistry. *J. Le Bourlot, G. Pineau des Forêts, E. Roueff, & P. Schilke*. 416, L87, 216-F1 (1993)
- NUCLEAR REACTIONS, NUCLEOSYNTHESIS, ABUNDANCES**
- A Hydrodynamical Model for the Explosion of a Neutron Star Just below the Minimum Mass. *Monica Colpi, Stuart L. Shapiro, & Saul A. Teukolsky*. 414, 717, 180-B10 (1993)
- Reaction Rates of the s -Process Neutron Sources $^{22}\text{Ne}(\alpha, n)^{25}\text{Mg}$ and $^{13}\text{C}(\alpha, n)^{16}\text{O}$. *H. W. Drotleff, A. Denker, H. Klee, M. Sointé, G. Wolf, J. W. Hammer, U. Greife, C. Rolfs, & H. P. Trautvetter*. 414, 735, 180-D3 (1993)
- Evidence for a Dispersion in the Lithium Abundances of Extreme Halo Stars. *Constantine P. Deliyannis, M. H. Pinsonneault, & Douglas K. Duncan*. 414, 740, 180-D10 (1993)
- Type II Supernovae from 8-10 M_{\odot} Asymptotic Giant Branch Stars. *Masaaki Hashimoto, Kohichi Iwamoto, & Ken'ichi Nomoto*. 414, L105, 186-A1 (1993)
- Neutrino Energy Loss in Stellar Interiors. V. Recombination Neutrino Process. *Yasuhiro Kohyama, Naoki Itoh, Akihiko Obama, & Haruhiko Mutoh*. 415, 267, 188-C9 (1993)
- On ^{26}Al and Other Short-lived Interstellar Radioactivity. *Donald D. Clayton, Dieter H. Hartmann, & Mark D. Leising*. 415, L25, 192-A1 (1993)
- Population II ^6Li as a Probe of Nucleosynthesis and Stellar Structure and Evolution. *Gary Steigman, Brian D. Fields, Keith A. Olive, David N. Schramm, & Terry P. Walker*. 415, L35, 192-B1 (1993)
- Abundances of Four Ultra-Metal-Deficient Stars. *John E. Norris, Ruth C. Peterson, & Timothy C. Beers*. 415, 797, 197-F13 (1993)
- PLANETS AND SATELLITES: GENERAL**
- Genesis of a Planet in Messier 4. *Steinn Sigurdsson*. 415, L43, 192-B13 (1993)

PLANETS AND SATELLITES: INDIVIDUAL

Jupiter

Polycyclic Aromatic Hydrocarbons in the Atmospheres of Titan and Jupiter. *Carl Sagan, B. N. Khare, W. R. Thompson, G. D. McDonald, Michael R. Wing, Jeffrey L. Bada, Tuan Vo-Dinh, & E. T. Arakawa.* 414, 399, 175-A3 (1993)

Detection of [O II] $\lambda 2471$ from the Io Plasma Torus. *M. A. McGrath, P. D. Feldman, D. F. Strobel, H. W. Moos, & G. E. Ballester.* 415, L55, 192-D7 (1993)

Io

Detection of [O III] $\lambda 5007$ Emission from the Io Plasma Torus. *Nicolas Thomas.* 414, L41, 175-G2 (1993)

Detection of [O II] $\lambda 2471$ from the Io Plasma Torus. *M. A. McGrath, P. D. Feldman, D. F. Strobel, H. W. Moos, & G. E. Ballester.* 415, L55, 192-D7 (1993)

Titan

Polycyclic Aromatic Hydrocarbons in the Atmospheres of Titan and Jupiter. *Carl Sagan, B. N. Khare, W. R. Thompson, G. D. McDonald, Michael R. Wing, Jeffrey L. Bada, Tuan Vo-Dinh, & E. T. Arakawa.* 414, 399, 175-A3 (1993)

PLASMAS

Detection of [O III] $\lambda 5007$ Emission from the Io Plasma Torus. *Nicolas Thomas.* 414, L41, 175-G2 (1993)

Propagation of Hydrodynamic Waves in Optically Thin Plasmas. *Miguel H. Ibáñez S., & Orlando B. Escalona T.* 415, 335, 189-B7 (1993)

Detection of [O II] $\lambda 2471$ from the Io Plasma Torus. *M. A. McGrath, P. D. Feldman, D. F. Strobel, H. W. Moos, & G. E. Ballester.* 415, L55, 192-D7 (1993)

Polarization Changes of Radiation through Stimulated Raman Scattering. *R. T. Gangadhara & V. Krishan.* 415, 505, 194-B6 (1993)

Ambipolar Diffusion and Star Formation: Formation and Contraction of Axisymmetric Cloud Cores. II. Results. *Robert A. Fiedler & Telemachos Ch. Mouschovias.* 415, 680, 196-C7 (1993)

Electromagnetic Radiation from a Strong DC Electric Field. *Manuel Güdel & Donat G. Wentzel.* 415, 750, 197-B10 (1993)

A Class of Three-dimensional Isothermal Laminated Equilibria and Their Stability. *Y. P. Chou, B. C. Low, & A. Bhattacharjee.* 416, 379, 205-F12 (1993)

Magnetically Confined Plasma Columns with Helical Symmetry. *L. J. Palumbo & A. M. Platzeck.* 416, 656, 211-E8 (1993)

POLARIZATION

Hubble Space Telescope Ultraviolet Spectroscopy of the Highly Polarized but Quiescent Quasar OI 287. *Robert Antonucci, Anne L. Kinney, & Todd Hurt.* 414, 506, 177-E1 (1993)

A New Method to Calculate the Extinction Properties of Irregularly Shaped Particles. *François Rouleau & P. G. Martin.* 414, 803, 181-C2 (1993)

Disks around Pre-Main-Sequence Binary Systems: The Case of Haro 6-10. *François Ménard, Jean-Louis Monin, Françoise Angelucci, & Daniel Rouan.* 414, L117, 186-B5 (1993)

The Highly Polarized Hidden Quasar IRAS 09104+4109: A Doubled Radio Source in a Rich Cluster. *Dean C. Hines & Beverley J. Wills.* 415, 82, 186-A10 (1993)

Polarization Changes of Radiation through Stimulated Raman Scattering. *R. T. Gangadhara & V. Krishan.* 415, 505, 194-B6 (1993)

Further Observations of the Peculiar Galactic Radio Source G318.9+0.4. *Jonathan B. Z. Whiteoak.* 415, 701, 196-E3 (1993)

First Ultraviolet Spectropolarimetry of Radio-selected BL Lacertae Objects. *Paul S. Smith, Richard G. Allen, & J. R. P. Angel.* 415, L83, 199-F6 (1993)

Polarization of Compact Radio Sources. *C.-I. Björnsson.* 416, 104, 202-C11 (1993)

Polarization of Astronomical Maser Radiation. II. Polarization Modes and Unsaturated Growth. *Moshe Elitzur.* 416, 256, 204-C7 (1993)

Milliarcsecond Polarization Structure of 24 Objects from the Pearson-Readhead Sample of Bright Extragalactic Radio Sources. I. The Images. *T. V. Cawthorne, J. F. C. Wardle, D. H. Roberts, D. C. Gabuzda, & L. F. Brown.* 416, 496, 209-D11 (1993)

Milliarcsecond Polarization Structure of 24 Objects from the Pearson-Readhead Sample of Bright Extragalactic Radio Sources. II. Discussion. *T. V. Cawthorne, J. F. C. Wardle, D. H. Roberts, & D. C. Gabuzda.* 416, 519, 209-G5 (1993)

Magnetic Fields in the Hydra A Cluster. *Gregory B. Taylor & Richard A. Perley.* 416, 554, 210-C3 (1993)

RADIATION MECHANISMS: CYCLOTRON AND SYNCHROTRON

Radiative Instability in Synchrotron-emitting Plasmas. *P. Rossi, G. Bodo, S. Massaglia, & A. Ferrari.* 414, 112, 171-D7 (1993)

RADIATION MECHANISMS: GRAVITATIONAL

Gravitational Radiation from Nonaxisymmetric Collisions of Neutron Stars. *Joan M. Centrella & Stephen L. W. McMillan.* 416, 719, 212-C10 (1993)

RADIATION MECHANISMS: MISCELLANEOUS

Compton-backscattered Annihilation Radiation from the Galactic Center Region. *D. M. Smith, R. P. Lin, P. Feffer, S. Slassi, K. Hurley, J. Mateson, H. B. Bowman, R. M. Pelling, M. Briggs, D. Gruber, L. E. Peterson, R. E. Lingenfelter, P. von Ballmoos, I. Malet, M. Niel, G. Vedrenne, P. Durouchoux, P. Wallyn, C. Chapuis, C. Cork, D. Landis, P. Luke, N. Madden, D. Malone, & R. Pehl.* 414, 165, 172-B1 (1993)

Shock Excitation of the Emission-Line Filaments in Centaurus A. *Ralph S. Sutherland, Geoffrey V. Bicknell, & Michael A. Dopita.* 414, 510, 177-E7 (1993)

Active Galactic Nuclei Make the Cosmic X-Ray Background. *Andrzej A. Zdziarski, Piotr T. Życki, & Julian H. Krolik.* 414, L81, 185-E8 (1993)

Acceleration Efficiency in Nonthermal Sources and the Soft Gamma Rays from NGC 4151 Observed by OSSE and SIGMA. *Andrzej A. Zdziarski, Alan P. Lightman, & Andrzej Maciolek-Niedzwiecki.* 414, L93, 185-F13 (1993)

A Physical Model of the Infrared-to-Radio Correlation in Galaxies. *G. Helou & M. D. Bica.* 415, 93, 186-B9 (1993)

Gasdynamics of Relativistically Expanding Gamma-Ray Burst Sources: Kinematics, Energetics, Magnetic Fields, and Efficiency. *P. Mészáros, P. Laguna, & M. J. Rees.* 415, 181, 187-C7 (1993)

The $C^{18}O$ Ratio Problem: A Possible New Precision Test of the Decaying Neutrino Theory. *D. W. Sciama.* 415, L31, 192-A8 (1993)

Polarization Changes of Radiation through Stimulated Raman Scattering. *R. T. Gangadhara & V. Krishan.* 415, 505, 194-B6 (1993)

Electromagnetic Radiation from a Strong DC Electric Field. *Manuel Güdel & Donat G. Wentzel.* 415, 750, 197-B10 (1993)

Polarization of Compact Radio Sources. *C.-I. Björnsson.* 416, 104, 202-C11 (1993)

Radio and Near-Infrared [Fe II] Emission from Active Galaxies. *Duncan A. Forbes & Martin J. Ward.* 416, 150, 202-G12 (1993)

Compton Backscattered Annihilation Radiation and the Mass of Nova Muscae. *Xin-Min Hua & Richard E. Lingenfelter.* 416, L17, 207-C11 (1993)

Model for the High-Energy Emission from Blazars. *Charles D. Dermer & Reinhard Schlickeiser.* 416, 458, 209-A11 (1993)

Synchrotron Radiation: An Inverse Compton Effect. *Richard Lieu & W. Ian Axford.* 416, 700, 212-B1 (1993)

Evaluation of Emission Mechanisms at ω_p Using Ulysses Observations of Type III Bursts. *G. Thejappa, D. Lengyel-Frey, R. G. Stone, & M. L. Goldstein.* 416, 831, 213-G1 (1993)

RADIATIVE TRANSFER

Formation of Quasar Clouds by Thermal Instability in the Presence of Alfvén Wave Heating. *D. R. Gonçalves, V. Jatenco-Pereira, & R. Opher.* 414, 57, 170-F12 (1993)

Effects of Internal Dust on the Narrow-Line Region Lyman and Balmer Decrements. *Luc Binette, John Wang, Montserrat Villar-Martin, Peter G. Martin, & Gladis Magris C.* 414, 535, 177-G9 (1993)

The Embedded Young Stars in the Taurus-Auriga Molecular Cloud. I. Models for Spectral Energy Distributions. *Scott J. Kenyon, Nuria Calvet, & Lee Hartmann.* 414, 676, 179-F1 (1993)

The Embedded Young Stars in the Taurus-Auriga Molecular Cloud. II. Models for Scattered Light Images. *Scott J. Kenyon, Barbara A.*

- Whitney, Mercedes Gomez, & Lee Hartmann. 414, 773, 180-G9 (1993)
- A Semi-Analytic Model for Cyclotron Line Formation. *J. C. L. Wang, I. Wasserman, & D. Q. Lamb.* 414, 815, 181-D2 (1993)
- On the Geometry, Covering Factor, and Scattering-Emission Properties of QSO Broad Absorption-Line Regions. *Fred Hamann, Kirk T. Korista, & Simon L. Morris.* 415, 541, 194-E11 (1993)
- The Relativistic Sobolev Method Applied to Homologously Expanding Atmospheres. *David J. Jeffery.* 415, 734, 197-A5 (1993)
- Polarization of Astronomical Maser Radiation. II. Polarization Modes and Unsaturated Growth. *Moshe Elitzur.* 416, 256, 204-C7 (1993)
- Proximity Effects in Clusters of Particles. *François Rouleau & P. G. Martin.* 416, 707, 212-B10 (1993)
- RADIO CONTINUUM: GALAXIES**
- Induced Star Formation in a Radio Lobe of 3C 285? *Wil J. M. van Breugel & Arjun Dey.* 414, 563, 178-C3 (1993)
- Millimeter and Submillimeter Continuum Emission from Early-Type Galaxies. *Michel Fich & Paul Hodge.* 415, 75, 186-A1 (1993)
- The Highly Polarized Hidden Quasar IRAS 09104+4109: A Double-lobed Radio Source in a Rich Cluster. *Dean C. Hines & Beverley J. Wills.* 415, 82, 186-A10 (1993)
- A Physical Model of the Infrared-to-Radio Correlation in Galaxies. *G. Helou & M. D. Bica.* 415, 93, 186-B9 (1993)
- Radio-selected BL Lacertae Objects and Some Correlations. *J. H. Fan, G. Z. Xie, J. J. Li, J. Liu, S. L. Wen, R. R. Huang, Z. M. Tang, & Y. J. Wang.* 415, 113, 186-D12 (1993)
- Statistics of QSO Broad Emission-Line Profiles. I. The C IV $\lambda 1549$ Line and the $\lambda 1400$ Feature. *Beverley J. Wills, M. S. Brotherton, D. Fang, Charles C. Steidel, & Wallace L. W. Sargent.* 415, 563, 194-G8 (1993)
- 3C 317: An Amorphous Radio Source in the Cooling Flow Cluster Abell 2052. *Jun-Hui Zhao, Dean M. Sumi, J. O. Burns, & Nebojsa Duric.* 416, 51, 201-F7 (1993)
- Polarization of Compact Radio Sources. *C.-I. Björnsson.* 416, 104, 202-C11 (1993)
- RADIO CONTINUUM: INTERSTELLAR**
- The Triple Radio Continuum Source in Serpens: The Birth of a Herbig-Haro System? *S. Curiel, L. F. Rodríguez, J. M. Moran, & J. Cantó.* 415, 191, 187-D5 (1993)
- Further Observations of the Peculiar Galactic Radio Source G318.9+0.4. *Jonathan B. Z. Whiteoak.* 415, 701, 196-E3 (1993)
- HH 80–81: A Highly Collimated Herbig-Haro Complex Powered by a Massive Young Star. *J. Martí, L. F. Rodríguez, & B. Reipurth.* 416, 208, 203-F1 (1993)
- RADIO CONTINUUM: STARS**
- The Contribution of Disks and Envelopes to the Millimeter Continuum Emission from Very Young Low-Mass Stars. *S. Terebey, C. J. Chandler, & P. André.* 414, 759, 180-F6 (1993)
- A Tight Correlation between Radio and X-Ray Luminosities of M Dwarfs. *Manuel Güdel, Jürgen H. M. M. Schmitt, Jay A. Bookbinder, & Thomas A. Fleming.* 415, 236, 188-A1 (1993)
- RADIO LINES: GALAXIES**
- Molecular Gas Mass and Far-Infrared Emission from Distant Luminous Galaxies. *D. Downes, P. M. Solomon, & S. J. E. Radford.* 414, 113, 175-D6 (1993)
- Neutral Hydrogen Absorption and Emission in the Quasar/Galaxy Pair 3C 275.1/NGC 4651. *Stephen E. Schneider & Edvige Corbelli.* 414, 500, 177-D7 (1993)
- Arecibo Observation of B2 0902+343 in the 21 Centimeter Line at Redshift 3.4. *F. H. Briggs, E. Sora, & A. Taramopoulos.* 415, L99, 200-A2 (1993)
- Kinematical Modeling of Warps in the H I Disks of Galaxies. *Dimitris M. Christodoulou, Joel E. Tohline, & Thomas Y. Steiman-Cameron.* 416, 74, 202-A7 (1993)
- Star Formation in the Spiral Arms of NGC 4321. II. H I Distribution and Kinematics. *Johan H. Knapen, Jordi Cepa, John E. Beckman, M. Soledad del Río, & Alan Pedlar.* 416, 563, 210-D1 (1993)
- RADIO LINES: GENERAL**
- Five Years of Project META: An All-Sky Narrow-Band Radio Search for Extraterrestrial Signals. *Paul Horowitz & Carl Sagan.* 415, 218, 187-F8 (1993)
- RADIO LINES: ISM**
- A High-Resolution H I Survey of the Rosette Nebula. *Thomas A. Kuchar & T. M. Bania.* 414, 664, 179-D12 (1993)
- High Spatial Resolution Observations of CO in CRL 618. *Katsunori M. Shibata, Shuji Deguchi, Naomi Hirano, Osamu Kameya, & Shin'ichi Tamura.* 415, 708, 196-F1 (1993)
- A Determination of the Distance to the High-Velocity Cloud Complex M. *Laura Danly, C. E. Albert, & K. D. Kuntz.* 416, L29, 207-D13 (1993)
- Refrigeration of the 183 GHz C₃H₂ Transition in Dark Cloud G1.6–0.25. *T. B. H. Kuiper, J. B. Whiteoak, R.-S. Peng, W. L. Peters III, & J. E. Reynolds.* 416, L33, 207-E7 (1993)
- Detection of the Interstellar NH₂ Radical. *Ewine F. van Dishoeck, David J. Jansen, Peter Schilke, & T. G. Phillips.* 416, L83, 216-E10 (1993)
- RADIO LINES: STARS**
- Atomic Carbon in the Envelope of IRC +10216. *Jocelyn Keene, K. Young, T. G. Phillips, Thomas H. Büttgenbach, & John E. Carlstrom.* 415, L131, 200-E1 (1993)
- RELATIVITY**
- Stability of Dense Stellar Clusters against Relativistic Collapse. *G. S. Bisnovatyi-Kogan, M. Merafina, R. Ruffini, & E. Vesperini.* 414, 187, 172-C13 (1993)
- Normal Modes of Relativistic Stars in Slow Rotation Limit. *Yasufumi Kojima.* 414, 247, 173-B3 (1993)
- Deflection of Light by the Earth. *Andrew Gould.* 414, L37, 175-F11 (1993)
- Constraints on Axions from the Extragalactic Background Light. *J. M. Overduin & P. S. Wesson.* 414, 449, 176-F10 (1993)
- Alfvénic Fluctuations in a Relativistic Wind with a Spiral Magnetic Field and Random Magnetic Field Structures in the Crab Nebula. *Yu-Qing Lou.* 414, 656, 179-D2 (1993)
- The Einsteinian Gravitational Field of the Rigidly Rotating Disk of Dust. *G. Neugebauer & R. Meinel.* 414, L97, 185-G5 (1993)
- The Relativistic Sobolev Method Applied to Homologously Expanding Atmospheres. *David J. Jeffery.* 415, 734, 197-A5 (1993)
- SCATTERING**
- Disks around Pre-Main-Sequence Binary Systems: The Case of Haro 6-10. *François Ménard, Jean-Louis Monin, Françoise Angelucci, & Daniel Rouan.* 414, L117, 186-B5 (1993)
- Partially Coherent Scattering in Stellar Chromospheres. IV. Analytic Wing Approximations. *K. G. Gayley.* 415, 811, 198-A1 (1993)
- Compton Backscattered Annihilation Radiation and the Mass of Nova Muscae. *Xin-Min Hua & Richard E. Lingenfelter.* 416, L17, 207-C11 (1993)
- SHOCK WAVES**
- A Cosmological Hydrodynamic Code Based on the Total Variation Diminishing Scheme. *Dongsu Ryu, Jeremiah P. Ostriker, Hyesung Kang, & Renyue Cen.* 414, 1, 170-B1 (1993)
- Chromospheric Heating by Acoustic Shock Waves. *Stuart D. Jordan.* 414, 337, 174-B12 (1993)
- Shock Excitation of the Emission-Line Filaments in Centaurus A. *Ralph S. Sutherland, Geoffrey V. Bicknell, & Michael A. Dopita.* 414, 510, 177-E7 (1993)
- Strong [Fe II] Emission from NGC 1275. *Richard J. Rudy, Ross D. Cohen, George S. Rossano, Peter Erwin, R. C. Puetter, Matthew A. Greenhouse, & Charles E. Woodward.* 414, 527, 177-F13 (1993)
- Observations of Entrainment and Time Variability in the HH 47 Jet. *Patrick Hartigan, Jon A. Morse, Steve Heathcote, & Gerald Cecil.* 414, L121, 186-B11 (1993)
- Convection above the Neutrinosphere in Type II Supernovae. *D. S. Miller, J. R. Wilson, & R. W. Mayle.* 415, 278, 188-D12 (1993)
- Radio and Near-Infrared [Fe II] Emission from Active Galaxies. *Duncan A. Forbes & Martin J. Ward.* 416, 150, 202-G12 (1993)
- Discovery of Interstellar Water Lines at 437, 439, and 471 GHz: Strong Case for Water Maser Formation behind C-Type Shocks. *Gary J. Melnick, Karl M. Menten, Thomas G. Phillips, & Todd Hunter.* 416, L37, 207-E13 (1993)
- A Theory of Supernova Explosions. *Adam Burrows & John Goshy.* 416, L75, 216-E1 (1993)

STARS: ABUNDANCES

CNO Abundances and the Evolutionary Status of Three A-Type Supergiants. *Kim A. Venn*. 414, 316, 174-A1 (1993)

The α -enhanced Isochrones and Their Impact on the Fits to the Galactic Globular Cluster System. *Maurizio Salaris, Alessandro Chieffi, & Oscar Straniero*. 414, 580, 178-D10 (1993)

Reaction Rates of the s-Process Neutron Sources $^{22}\text{Ne}(\alpha, n)^{25}\text{Mg}$ and $^{13}\text{C}(\alpha, n)^{16}\text{O}$. *H. W. Drotleff, A. Denker, H. Knece, M. Soiné, G. Wolf, J. W. Hammer, U. Greife, C. Rolfs, & H. P. Trautvetter*. 414, 735, 180-D3 (1993)

Evidence for a Dispersion in the Lithium Abundances of Extreme Halo Stars. *Constantine P. Deliyannis, M. H. Pinsonneault, & Douglas K. Duncan*. 414, 740, 180-D10 (1993)

Lithium in the Hyades. I. New Observations. *J. A. Thorburn, L. M. Hobbs, Constantine P. Deliyannis, & M. H. Pinsonneault*. 415, 150, 186-G12 (1993)

Population II ^6Li as a Probe of Nucleosynthesis and Stellar Structure and Evolution. *Gary Steigman, Brian D. Fields, Keith A. Olive, David N. Schramm, & Terry P. Walker*. 415, L35, 192-B1 (1993)

Abundances of Four Ultra-Metal-Deficient Stars. *John E. Norris, Ruth C. Peterson, & Timothy C. Beers*. 415, 797, 197-F13 (1993)

Diffusion of Lithium and Beryllium in Evolving, Nonrotating Main-Sequence A and F Stars. *Jacques Richer & Georges Michaud*. 416, 312, 205-A5 (1993)

The Mount Wilson Observatory Metallicity Index, C_{RV} : Comparison with Other Photometric Systems. *W. H. Soon, Q. Zhang, S. L. Baliunas, & R. L. Kurucz*. 416, 787, 213-C1 (1993)

Two New Extremely Iron-rich Hot DA White Dwarfs and the Nature of the EUV Opacity. *J. B. Holberg, M. A. Barstow, D. A. H. Buckley, A. Chen, S. Dreizler, M. C. Marsh, D. O'Donoghue, E. M. Sion, R. W. Tweedy, G. Vauclair, & K. Werner*. 416, 806, 213-D13 (1993)

STARS: ACTIVITY

An Interpretation of Cycle Periods of Stellar Chromospheric Activity. *W. H. Soon, S. L. Baliunas, & Q. Zhang*. 414, L33, 175-F6 (1993)

A Search for Proton Beams during Flares on AU Microscopii. *R. D. Robinson, K. G. Carpenter, B. E. Woodgate, & S. P. Maran*. 414, 872, 182-B5 (1993)

HR 1362: The Evolved 53 Camelopardalis. *K. Stępień*. 416, 368, 205-E11 (1993)

ROSAT X-Ray Study of the Chamaeleon I Dark Cloud. I. The Stellar Population. *Eric D. Feigelson, Sophie Casanova, Thierry Montmerle, & Jean Guibert*. 416, 623, 211-B8 (1993)

STARS: AGB AND POST-AGB

LS II +34°26 is a Low-Mass Post-Asymptotic Giant Branch B Supergiant and Not a Massive Population I B Star Located near the Outer Edge of the Galaxy. *M. Parthasarathy*. 414, L109, 186-A7 (1993)

Infrared Spectra of Transition Objects and the Composition and Evolution of Carbon Dust. *R. H. Buss, Jr., A. G. G. M. Tielens, M. Cohen, M. W. Werner, J. D. Bregman, & F. C. Witteborn*. 415, 250, 188-B3 (1993)

The Age of the Large Magellanic Cloud Cluster NGC 1953. *J. R. Mould, D. A. Xystus, G. S. Da Costa, & R. A. Schommer*. 416, 582, 210-E12 (1993)

Prevention of High-Luminosity Carbon Stars by Hot Bottom Burning. *Arnold I. Boothroyd, I.-Juliana Sackmann, & Sean C. Aherm*. 416, 762, 212-G6 (1993)

Circumstellar Properties of S Stars. I. Dust Features. *P. S. Chen & Sun Kwok*. 416, 769, 213-A1 (1993)

STARS: ATMOSPHERES

The "Baldwin Effect" in Wolf-Rayet Stars. *Patrick Morris, Peter S. Conti, Henny J. G. L. M. Lamers, & Gloria Koenigsberger*. 414, L25, 175-E7 (1993)

The Relativistic Sobolev Method Applied to Homologously Expanding Atmospheres. *David J. Jeffery*. 415, 734, 197-A5 (1993)

STARS: BINARIES: CLOSE

The "Type IIb" Supernova 1993J in M81: A Close Relative of Type Ib Supernovae. *Alexei V. Filippenko, Thomas Matheson, & Luis C. Ho*. 415, L103, 200-A8 (1993)

On the Origin of the Eclipsing Pulsar PSR B1718-19 and Its Wind. *R. A. M. J. Wijers & B. Paczyński*. 415, L115, 200-C1 (1993)

On the Interpretation of the Ultraviolet Spectra of Symbiotic Stars and Recurrent Novae. I. *Steven N. Shore & Jason P. Aufdenberg*. 416, 355, 205-D10 (1993)

STARS: BINARIES: ECLIPSING

Circumstellar Material in TX Ursae Majoris. *Geary E. Albright & Mercedes T. Richards*. 414, 830, 181-E6 (1993)

Ultraviolet Observations of Selective Wind Eclipses in γ Velorum and Evidence for Colliding Winds. *N. St-Louis, A. J. Willis, & I. R. Stevens*. 415, 298, 188-F8 (1993)

STARS: BINARIES: GENERAL

Disks around Pre-Main-Sequence Binary Systems: The Case of Haro 6-10. *François Ménard, Jean-Louis Monin, Françoise Angelucci, & Daniel Rouan*. 414, L117, 186-B5 (1993)

STARS: BINARIES: VISUAL

Restoration of Astronomical Images by Iterative Blind Deconvolution. *Stuart M. Jefferies & Julian C. Christou*. 415, 862, 198-F9 (1993)

STARS: CARBON

Infrared Spectra of Transition Objects and the Composition and Evolution of Carbon Dust. *R. H. Buss, Jr., A. G. G. M. Tielens, M. Cohen, M. W. Werner, J. D. Bregman, & F. C. Witteborn*. 415, 250, 188-B3 (1993)

Atomic Carbon in the Envelope of IRC +10216. *Jocelyn Keene, K. Young, T. G. Phillips, Thomas H. Büttgenbach, & John E. Carlstrom*. 415, L131, 200-E1 (1993)

Prevention of High-Luminosity Carbon Stars by Hot Bottom Burning. *Arnold I. Boothroyd, I.-Juliana Sackmann, & Sean C. Aherm*. 416, 762, 212-G6 (1993)

STARS: CHEMICALLY PECULIAR

Reaction Rates of the s-Process Neutron Sources $^{22}\text{Ne}(\alpha, n)^{25}\text{Mg}$ and $^{13}\text{C}(\alpha, n)^{16}\text{O}$. *H. W. Drotleff, A. Denker, H. Knece, M. Soiné, G. Wolf, J. W. Hammer, U. Greife, C. Rolfs, & H. P. Trautvetter*. 414, 735, 180-D3 (1993)

STARS: CHROMOSPHERES

An Interpretation of Cycle Periods of Stellar Chromospheric Activity. *W. H. Soon, S. L. Baliunas, & Q. Zhang*. 414, L33, 175-F6 (1993)

Partially Coherent Scattering in Stellar Chromospheres. IV. Analytic Wing Approximations. *K. G. Gayley*. 415, 811, 198-A1 (1993)

STARS: CIRCUMSTELLAR MATTER

Upper Limits to the Detection of Ammonia from Protoplanetary Disks around HL Tauri and L1551-IRS 5. *José F. Gómez, José M. Torrelles, Paul T. P. Ho, Luis F. Rodríguez, & Jorge Cantó*. 414, 333, 174-B6 (1993)

The Small-Scale Structure and Kinematics of B335. *Claire J. Chandler & Anneila I. Sargent*. 414, L29, 175-E13 (1993)

The Contribution of Disks and Envelopes to the Millimeter Continuum Emission from Very Young Low-Mass Stars. *S. Terebey, C. J. Chandler, & P. André*. 414, 759, 180-F6 (1993)

Submillimeter Studies of Main-Sequence Stars. *B. Zuckerman & E. E. Becklin*. 414, 793, 181-B4 (1993)

Circumstellar Material in TX Ursae Majoris. *Geary E. Albright & Mercedes T. Richards*. 414, 830, 181-E6 (1993)

LS II +34°26 is a Low-Mass Post-Asymptotic Giant Branch B Supergiant and Not a Massive Population I B Star Located near the Outer Edge of the Galaxy. *M. Parthasarathy*. 414, L109, 186-A7 (1993)

Detection of Accreting Gas toward HD 45677: A Newly Recognized, Herbig Be Proto-Planetary System. *C. A. Grady, K. S. Bjorkman, D. Shepherd, R. E. Schulte-Ladbeck, M. R. Pérez, D. de Winter, & P. S. Thé*. 415, L39, 192-B6 (1993)

Evidence for Hydrated Silicates toward SN 1987A. *Ralf Timmermann & Harold P. Larson*. 415, 820, 198-A13 (1993)

Atomic Carbon in the Envelope of IRC +10216. *Jocelyn Keene, K. Young, T. G. Phillips, Thomas H. Büttgenbach, & John E. Carlstrom*. 415, L131, 200-E1 (1993)

Discovery of Interstellar Water Lines at 437, 439, and 471 GHz: Strong Case for Water Maser Formation behind C-Type Shocks. *Gary J. Melnick, Karl M. Menten, Thomas G. Phillips, & Todd Hunter*. 416, L37, 207-E13 (1993)

Circumstellar Properties of S Stars. I. Dust Features. *P. S. Chen & Sun Kwok*. 416, 769, 213-A1 (1993)

STARS: CORONAE

- Extreme Ultraviolet Explorer* Observations of the RS Canum Venaticorum Systems AR Lacertae and II Pegasi. R. J. Patterer, P. W. Vedder, P. Jelinsky, A. Brown, & S. Bowyer. 414, L57, 185-B13 (1993)
- Extreme Ultraviolet Emission from Late-Type Stars: Initial Results from *Extreme Ultraviolet Explorer*. Peter W. Vedder, Robert J. Patterer, Patrick Jelinsky, Alex Brown, & Stuart Bowyer. 414, L61, 185-C5 (1993)
- Discrete High-Frequency p -Modes as Probes of Structures in the Chromosphere, Transition Region, and Lower Corona of the Sun. Yu-Qing Lou. 414, L141, 186-E1 (1993)
- The Evolution of Stellar Coronae: Initial Results from a *ROSAT* PSPC Observation of IC 2391. Brian M. Patten & Theodore Simon. 415, L123, 200-D1 (1993)
- ROSAT* X-Ray Detection of ϵ Taurus: Revisiting the Coronal and Transition Region Emission of the Hyades Giants. A. Collura, A. Maggio, G. Micela, S. Sciortino, F. R. Harnden, Jr., & R. Rosner. 416, 204, 203-E8 (1993)
- Detection of the First Coronal X-Ray Source about a White Dwarf. Thomas A. Fleming, Klaus Werner, & Martin A. Barstow. 416, L79, 216-E6 (1993)

STARS: EARLY-TYPE

- Intense Extreme Ultraviolet Emission from the B Star ϵ Canis Majoris. John V. Vallerger, Peter W. Vedder, & Barry Y. Welsh. 414, L65, 185-C11 (1993)
- LS II +34°26 is a Low-Mass Post-Asymptotic Giant Branch B Supergiant and Not a Massive Population I B Star Located near the Outer Edge of the Galaxy. M. Parthasarathy. 414, L109, 186-A7 (1993)
- The Evolution of Stellar Coronae: Initial Results from a *ROSAT* PSPC Observation of IC 2391. Brian M. Patten & Theodore Simon. 415, L123, 200-D1 (1993)

STARS: EMISSION-LINE, BE

- Detection of Accreting Gas toward HD 45677: A Newly Recognized, Herbig Be Proto-Planetary System. C. A. Grady, K. S. Bjorkman, D. Shepherd, R. E. Schulte-Ladbeck, M. R. Pérez, D. de Winter, & P. S. Thé. 415, L39, 192-B6 (1993)
- On the Interpretation of the Ultraviolet Spectra of Symbiotic Stars and Recurrent Novae. I. Steven N. Shore & Jason P. Aufdenberg. 416, 355, 205-D10 (1993)
- The Asymmetric Envelope of γ Cassiopeiae Observed with the Mk III Optical Interferometer. A. Quirrenbach, C. A. Hummel, D. F. Buscher, J. T. Armstrong, D. Mozurkewich, & N. M. Elias II. 416, L25, 207-D7 (1993)

STARS: EVOLUTION

- CNO Abundances and the Evolutionary Status of Three A-Type Supergiants. Kim A. Venn. 414, 316, 174-A1 (1993)
- The α -enhanced Isochrones and Their Impact on the Fits to the Galactic Globular Cluster System. Maurizio Salaris, Alessandro Chieffi, & Oscar Straniero. 414, 580, 178-D10 (1993)
- Reaction Rates of the s -Process Neutron Sources $^{22}\text{Ne}(\alpha, n)^{25}\text{Mg}$ and $^{13}\text{C}(\alpha, n)^{16}\text{O}$. H. W. Drotleff, A. Denker, H. Kneé, M. Soiné, G. Wolf, J. W. Hammer, U. Greife, C. Rolfs, & H. P. Trautvetter. 414, 735, 180-D3 (1993)
- Type II Supernovae from 8–10 M_{\odot} Asymptotic Giant Branch Stars. Masaaki Hashimoto, Kohichi Iwamoto, & Ken'ichi Nomoto. 414, L105, 186-A1 (1993)
- On Why Intermediate-Mass Stars Become Giants after the Exhaustion of Hydrogen in Their Cores. Icko Iben, Jr. 415, 767, 197-D5 (1993)
- A Method for Quantitative Detection of Hot Horizontal Branches in Early-Type Galaxies. Guy Worthey. 415, L91, 199-G6 (1993)
- The "Type Iib" Supernova 1993 in M81: A Close Relative of Type Ib Supernovae. Alexei V. Filippenko, Thomas Matheson, & Luis C. Ho. 415, L103, 200-A8 (1993)
- On the Origin of the Eclipsing Pulsar PSR B1718–19 and Its Wind. R. A. M. J. Wijers & B. Paczyński. 415, L115, 200-C1 (1993)
- Diffusion of Lithium and Beryllium in Evolving, Nonrotating Main-Sequence A and F Stars. Jacques Richer & Georges Michaud. 416, 312, 205-A5 (1993)
- The Age of the Large Magellanic Cloud Cluster NGC 1953. J. R. Mould, D. A. Xystus, G. S. Da Costa, & R. A. Schommer. 416, 582, 210-E12 (1993)

STARS: FLARE

- A Search for Proton Beams during Flares on AU Microscopii. R. D. Robinson, K. G. Carpenter, B. E. Woodgate, & S. P. Maran. 414, 872, 182-B5 (1993)
- Extreme Ultraviolet Explorer* Deep Survey Observations of a Large Flare on AU Microscopii. Scott L. Cully, Oswald H. W. Siegmund, Peter W. Vedder, & John V. Vallerger. 414, L49, 185-B1 (1993)

STARS: FORMATION

- The Faintest Stars: The Luminosity and Mass Functions at the Bottom of the Main Sequence. Christopher G. Tinney. 414, 279, 173-D12 (1993)
- The Small-Scale Structure and Kinematics of B335. Claire J. Chandler & Anneila I. Sargent. 414, L29, 175-E13 (1993)
- Induced Star Formation in a Radio Lobe of 3C 285? Wil J. M. van Breugel & Arjun Dey. 414, 563, 178-C3 (1993)
- The Embedded Young Stars in the Taurus-Auriga Molecular Cloud. I. Models for Spectral Energy Distributions. Scott J. Kenyon, Nuria Calvet, & Lee Hartmann. 414, 676, 179-F1 (1993)
- The Embedded Young Stars in the Taurus-Auriga Molecular Cloud. II. Models for Scattered Light Images. Scott J. Kenyon, Barbara A. Whitney, Mercedes Gomez, & Lee Hartmann. 414, 773, 180-G9 (1993)
- The Triple Radio Continuum Source in Serpens: The Birth of a Herbig-Haro System? S. Curiel, L. F. Rodríguez, J. M. Moran, & J. Cantó. 415, 191, 187-D5 (1993)
- Ambipolar Diffusion and Star Formation: Formation and Contraction of Axisymmetric Cloud Cores. II. Results. Robert A. Fiedler & Telemachos Ch. Mouschovias. 415, 680, 196-C7 (1993)
- Hubble Space Telescope* Images of the Subarcsecond Jet in DG Tauri. J. Kepner, P. Hartigan, C. Yang, & S. Strom. 415, L119, 200-C8 (1993)
- Shear in the IRAS 3282 Outflow. M. Tafalla, R. Bachiller, J. Martín-Pintado, & M. C. H. Wright. 415, L139, 200-F1 (1993)
- HH 80–81: A Highly Collimated Herbig-Haro Complex Powered by a Massive Young Star. J. Martí, L. F. Rodríguez, & B. Reipurth. 416, 208, 203-F1 (1993)
- Gravitational Collapse of an Isothermal Sphere. Prudence N. Foster & Roger A. Chevalier. 416, 303, 204-G8 (1993)
- Star Formation in the Spiral Arms of NGC 4321. II. H I Distribution and Kinematics. Johan H. Knapen, Jordi Cepa, John E. Beckman, M. Soledad del Río, & Alan Pedlar. 416, 563, 210-D1 (1993)
- On the Angular Momentum Transport Associated with Convective Eddies in Accretion Disks. W. Kley, J. C. B. Papaloizou, & D. N. C. Lin. 416, 679, 211-G7 (1993)
- On the Nonaxisymmetric Convective Instabilities in Accretion Disks. D. N. C. Lin, J. C. B. Papaloizou, & W. Kley. 416, 689, 212-A4 (1993)

STARS: GIANT

- Reaction Rates of the s -Process Neutron Sources $^{22}\text{Ne}(\alpha, n)^{25}\text{Mg}$ and $^{13}\text{C}(\alpha, n)^{16}\text{O}$. H. W. Drotleff, A. Denker, H. Kneé, M. Soiné, G. Wolf, J. W. Hammer, U. Greife, C. Rolfs, & H. P. Trautvetter. 414, 735, 180-D3 (1993)
- On Why Intermediate-Mass Stars Become Giants after the Exhaustion of Hydrogen in Their Cores. Icko Iben, Jr. 415, 767, 197-D5 (1993)
- ROSAT* X-Ray Detection of ϵ Taurus: Revisiting the Coronal and Transition Region Emission of the Hyades Giants. A. Collura, A. Maggio, G. Micela, S. Sciortino, F. R. Harnden, Jr., & R. Rosner. 416, 204, 203-E8 (1993)

STARS: HORIZONTAL-BRANCH

- A Method for Quantitative Detection of Hot Horizontal Branches in Early-Type Galaxies. Guy Worthey. 415, L91, 199-G6 (1993)

STARS: IMAGING

- The Asymmetric Envelope of γ Cassiopeiae Observed with the Mk III Optical Interferometer. A. Quirrenbach, C. A. Hummel, D. F. Buscher, J. T. Armstrong, D. Mozurkewich, & N. M. Elias II. 416, L25, 207-D7 (1993)

STARS: INDIVIDUAL

Constellation Name: ϵ Canis Majoris

- Intense Extreme Ultraviolet Emission from the B Star ϵ Canis Majoris. John V. Vallerger, Peter W. Vedder, & Barry Y. Welsh. 414, L65, 185-C11 (1993)

Constellation Name: EZ Canis Majoris

The Spectrum of EZ Canis Majoris (HD 50896) to the Lyman Limit with the Hopkins Ultraviolet Telescope. *Stephan R. McCandless, Richard H. Buss, Jr., William P. Blair, Charles W. Bowers, Arthur F. Davidsen, Paul D. Feldman, & Jeffrey W. Kruk.* 416, 372, 205-F3 (1993)

 Constellation Name: γ Cassiopeiae

The Asymmetric Envelope of γ Cassiopeiae Observed with the Mk III Optical Interferometer. *A. Quirrenbach, C. A. Hummel, D. F. Buscher, J. T. Armstrong, D. Mozurkewich, & N. M. Elias II.* 416, L25, 207-D7 (1993)

 Constellation Name: α Centauri

Extreme Ultraviolet Emission from Late-Type Stars: Initial Results from *Extreme Ultraviolet Explorer*. *Peter W. Vedder, Robert J. Patterer, Patrick Jelinsky, Alex Brown, & Stuart Bowyer.* 414, L61, 185-C5 (1993)

Constellation Name: AR Lacertae

Extreme Ultraviolet Explorer Observations of the RS Canum Venaticorum Systems AR Lacertae and II Pegasi. *R. J. Patterer, P. W. Vedder, P. Jelinsky, A. Brown, & S. Bowyer.* 414, L57, 185-B13 (1993)

Constellation Name: AU Microscopii

A Search for Proton Beams during Flares on AU Microscopii. *R. D. Robinson, K. G. Carpenter, B. E. Woodgate, & S. P. Maran.* 414, 872, 182-B5 (1993)

 Constellation Name: ζ Ophiuchi

Density, Temperature, and Isotopic Abundance in Molecular Gas around ζ Ophiuchi. *Harvey S. Liszt.* 414, 242, 173-A10 (1993)

Constellation Name: II Pegasi

Extreme Ultraviolet Explorer Observations of the RS Canum Venaticorum Systems AR Lacertae and II Pegasi. *R. J. Patterer, P. W. Vedder, P. Jelinsky, A. Brown, & S. Bowyer.* 414, L57, 185-B13 (1993)

Constellation Name: DG Tauri

Hubble Space Telescope Images of the Subarcsecond Jet in DG Tauri. *J. Kepner, P. Hartigan, C. Yang, & S. Strom.* 415, L119, 200-C8 (1993)

Constellation Name: HL Tauri

Upper Limits to the Detection of Ammonia from Protoplanetary Disks around HL Tauri and L1551-IRS 5. *José F. Gómez, José M. Torrelles, Paul T. P. Ho, Luis F. Rodríguez, & Jorge Cantó.* 414, 333, 174-B6 (1993)

 Constellation Name: α Ursae Minoris

Goodbye to Polaris the Cepheid. *J. D. Fernie, Karl W. Kamper, & S. Seager.* 416, 820, 213-F1 (1993)

Constellation Name: TX Ursae Majoris

Circumstellar Material in TX Ursae Majoris. *Geary E. Albrighi & Mercedes T. Richards.* 414, 830, 181-E6 (1993)

 Constellation Name: γ Velorum

Ultraviolet Observations of Selective Wind Eclipses in γ Velorum and Evidence for Colliding Winds. *N. St-Louis, A. J. Willis, & I. R. Stevens.* 415, 298, 188-F8 (1993)

Bright Star Number: HR 1362

HR 1362: The Evolved 53 Camelopardalis. *K. Stepień.* 416, 368, 205-E11 (1993)

Henry Draper Number: HD 45677

Detection of Accreting Gas toward HD 45677: A Newly Recognized, Herbig Be Proto-Planetary System. *C. A. Gady, K. S. Bjorkman, D. Shepherd, R. E. Schulte-Ladbeck, M. R. Pérez, D. de Winter, & P. S. Thé.* 415, L39, 192-B6 (1993)

Henry Draper Number: HD 183143

HR 1362: The Evolved 53 Camelopardalis. *K. Stepień.* 416, 368, 205-E11 (1993)

Name: Haro 6-10

Disks around Pre-Main-Sequence Binary Systems: The Case of Haro 6-10. *François Ménard, Jean-Louis Monin, Françoise Angelucci, & Daniel Rouan.* 414, L117, 186-B5 (1993)

Alphanumeric: III 46/47

Observations of Entrainment and Time Variability in the HH 47 Jet. *Patrick Hartigan, Jon A. Morse, Steve Heathcote, & Gerald Cecil.* 414, L121, 186-B11 (1993)

Alphanumeric: IRC +10216

Atomic Carbon in the Envelope of IRC +10216. *Jocelyn Keene, K. Young, T. G. Phillips, Thomas H. Büttgenbach, & John E. Carlstrom.* 415, L131, 200-E1 (1993)

Alphanumeric: L1551 IRS 5

Upper Limits to the Detection of Ammonia from Protoplanetary Disks around HL Tauri and L1551-IRS 5. *José F. Gómez, José M. Torrelles, Paul T. P. Ho, Luis F. Rodríguez, & Jorge Cantó.* 414, 333, 174-B6 (1993)

Alphanumeric: LS II +34°26

LS II +34°26 is a Low-Mass Post-Asymptotic Giant Branch B Supergiant and Not a Massive Population I B Star Located near the Outer Edge of the Galaxy. *M. Parthasarathy.* 414, L109, 186-A7 (1993)

Alphanumeric: RE 0623-377

Two New Extremely Iron-rich Hot DA White Dwarfs and the Nature of the EUV Opacity. *J. B. Holberg, M. A. Barstow, D. A. H. Buckley, A. Chen, S. Dreizler, M. C. Marsh, D. O'Donoghue, E. M. Sion, R. W. Tweedy, G. Vauclair, & K. Werner.* 416, 806, 213-D13 (1993)

Alphanumeric: RE 1938-461

Extreme Ultraviolet Explorer Observations of the Magnetic Cataclysmic Variable RE 1938-461. *John K. Warren, John V. Vallerger, Christopher W. Mauche, Koji Mukai, & Oswald H. W. Siegmund.* 414, L69, 185-D2 (1993)

Alphanumeric: RE 2214-492

Two New Extremely Iron-rich Hot DA White Dwarfs and the Nature of the EUV Opacity. *J. B. Holberg, M. A. Barstow, D. A. H. Buckley, A. Chen, S. Dreizler, M. C. Marsh, D. O'Donoghue, E. M. Sion, R. W. Tweedy, G. Vauclair, & K. Werner.* 416, 806, 213-D13 (1993)

Alphanumeric: SN 1978K

SN 1978K: An Extraordinary Supernova in the Nearby Galaxy NGC 1313. *Stuart Ryder, Lister Staveley-Smith, Michael Dopita, Robert Peire, Edward Colbert, David Malin, & Eric Schlegel.* 416, 167, 203-B6 (1993)

Alphanumeric: SN 1987A

Evidence for Hydrated Silicates toward SN 1987A. *Ralf Timmermann & Harold P. Larson.* 415, 820, 198-A13 (1993)

STARS: INTERIORS

CNO Abundances and the Evolutionary Status of Three A-Type Supergiants. *Kim A. Venn.* 414, 316, 174-A1 (1993)

The α -enhanced Isochrones and Their Impact on the Fits to the Galactic Globular Cluster System. *Maurizio Salaris, Alessandro Chieffi, & Oscar Straniero.* 414, 580, 178-D10 (1993)

The QCD Phase Transition and Supernova Core Collapse. *N. A. Gentile, M. B. Aufderheide, G. J. Mathews, F. D. Swesty, & G. M. Fuller.* 414, 701, 180-A3 (1993)

An Analytical Model for the Plateau Stage of Type II Supernovae. *D. V. Popov.* 414, 712, 180-B3 (1993)

A Hydrodynamical Model for the Explosion of a Neutron Star Just below the Minimum Mass. *Monica Colpi, Stuart L. Shapiro, & Saul A. Teukolsky.* 414, 717, 180-B10 (1993)

Reaction Rates of the s-Process Neutron Sources $^{22}\text{Ne}(\alpha, n)^{25}\text{Mg}$ and $^{13}\text{C}(\alpha, n)^{16}\text{O}$. *H. W. Drotleff, A. Denker, H. Klee, M. Soiné, G. Wolf, J. W. Hammer, U. Greife, C. Rolfs, & H. P. Trauvelter.* 414, 735, 180-D3 (1993)

Type II Supernovae from 8-10 M_{\odot} Asymptotic Giant Branch Stars. *Masaaki Hashimoto, Kohichi Iwamoto, & Ken'ichi Nomoto.* 414, L105, 186-A1 (1993)

Vortex Pinning by Quenched Randomness in Neutron Stars. *Eric Chevalier.* 414, L113, 186-A13 (1993)

Neutrino Energy Loss in Stellar Interiors. V. Recombination Neutrino Process. *Yasuhiro Kohyama, Naoki Itoh, Akihiko Obama, & Haruhiko Muoh.* 415, 267, 188-C9 (1993)

Convection above the Neutrinosphere in Type II Supernovae. *D. S. Miller, J. R. Wilson, & R. W. Mayle.* 415, 278, 188-D12 (1993)

Neutrino Emission from the Bubble Phase of Stellar Nuclear Matter. *L. B. Leinson.* 415, 759, 197-C8 (1993)

On Why Intermediate-Mass Stars Become Giants after the Exhaustion of Hydrogen in Their Cores. *Jcko Iben, Jr.* 415, 767, 197-D5 (1993)

- Diffusion of Lithium and Beryllium in Evolving, Nonrotating Main-Sequence A and F Stars. *Jacques Richer & Georges Michaud*. 416, 312, 205-A5 (1993)
- Turbulent Convection with Overshooting: Reynolds Stress Approach. II. *V. M. Canuto*. 416, 331, 205-B12 (1993)
- Simulation of Compressible Convection: A Comparative Study of Boundary Conditions. *Murshed Hossain & D. J. Mullan*. 416, 733, 212-E1 (1993)
- Prevention of High-Luminosity Carbon Stars by Hot Bottom Burning. *Arnold I. Boothroyd, I. Juliana Sackmann, & Sean C. Aherm*. 416, 762, 212-G6 (1993)
- STARS: LATE-TYPE**
- An Interpretation of Cycle Periods of Stellar Chromospheric Activity. *W. H. Soon, S. L. Baliunas, & Q. Zhang*. 414, L33, 175-F6 (1993)
- X-Ray Emission at the Low-Mass End: Results from an Extensive Einstein Observatory Survey. *M. Barbera, G. Micela, S. Sciortino, F. R. Harnden, Jr., & R. Rosner*. 414, 846, 181-F10 (1993)
- Extreme Ultraviolet Explorer Deep Survey Observations of a Large Flare on AU Microscopii. *Scott L. Cully, Oswald H. W. Siegmund, Peter W. Vedder, & John V. Vallerger*. 414, L49, 185-B1 (1993)
- Extreme Ultraviolet Explorer Observations of the RS Canum Venaticorum Systems AR Lacertae and II Pegasi. *R. J. Patterer, P. W. Vedder, P. Jelinsky, A. Brown, & S. Bowyer*. 414, L57, 185-B13 (1993)
- Extreme Ultraviolet Emission from Late-Type Stars: Initial Results from Extreme Ultraviolet Explorer. *Peter W. Vedder, Robert J. Patterer, Patrick Jelinsky, Alex Brown, & Stuart Bowyer*. 414, L61, 185-C5 (1993)
- A Tight Correlation between Radio and X-Ray Luminosities of M Dwarfs. *Manuel Güdel, Jürgen H. M. M. Schmitt, Jay A. Bookbinder, & Thomas A. Fleming*. 415, 236, 188-A1 (1993)
- The Evolution of Stellar Coronae: Initial Results from a ROSAT PSPC Observation of IC 2391. *Brian M. Patten & Theodore Simon*. 415, L123, 200-D1 (1993)
- Discovery of Interstellar Water Lines at 437, 439, and 471 GHz: Strong Case for Water Maser Formation behind C-Type Shocks. *Gary J. Melnick, Karl M. Menten, Thomas G. Phillips, & Todd Hunter*. 416, L37, 207-E13 (1993)
- The Mount Wilson Observatory Metallicity Index, C_{RV} : Comparison with Other Photometric Systems. *W. H. Soon, Q. Zhang, S. L. Baliunas, & R. L. Kurucz*. 416, 787, 213-C1 (1993)
- STARS: LOW-MASS, BROWN DWARFS**
- The Faintest Stars: From Schmidt Plates to Luminosity Functions. *C. G. Tinney, I. N. Reid, & J. R. Mould*. 414, 254, 173-B12 (1993)
- The Faintest Stars: The Luminosity and Mass Functions at the Bottom of the Main Sequence. *Christopher G. Tinney*. 414, 279, 173-D12 (1993)
- The Contribution of Disks and Envelopes to the Millimeter Continuum Emission from Very Young Low-Mass Stars. *S. Terebey, C. J. Chandler, & P. André*. 414, 759, 180-F6 (1993)
- The Stellar Population in the ρ Ophiuchi Cluster. *F. Comerón, G. H. Rieke, A. Burrows, & M. J. Rieke*. 416, 185, 203-D1 (1993)
- STARS: LUMINOSITY FUNCTION, MASS FUNCTION**
- The Faintest Stars: From Schmidt Plates to Luminosity Functions. *C. G. Tinney, I. N. Reid, & J. R. Mould*. 414, 254, 173-B12 (1993)
- The Faintest Stars: The Luminosity and Mass Functions at the Bottom of the Main Sequence. *Christopher G. Tinney*. 414, 279, 173-D12 (1993)
- The Stellar Population in the ρ Ophiuchi Cluster. *F. Comerón, G. H. Rieke, A. Burrows, & M. J. Rieke*. 416, 185, 203-D1 (1993)
- STARS: MAGNETIC FIELDS**
- An Interpretation of Cycle Periods of Stellar Chromospheric Activity. *W. H. Soon, S. L. Baliunas, & Q. Zhang*. 414, L33, 175-F6 (1993)
- Extreme Ultraviolet Explorer Observations of the Magnetic Cataclysmic Variable RE 1938-461. *John K. Warren, John V. Vallerger, Christopher W. Mauche, Koji Mukai, & Oswald H. W. Siegmund*. 414, L69, 185-D2 (1993)
- Thomas-Fermi Calculations of Atoms and Matter in Magnetic Neutron Stars: Effects of Higher Landau Bands. *Ö. E. Rognvaldsson, I. Fushiki, E. H. Gudmundsson, C. J. Pethick, & J. Yngvason*. 416, 276, 204-E3 (1993)
- HR 1362: The Evolved 53 Camelopardalis. *K. Stępień*. 416, 368, 205-E11 (1993)
- STARS: MASS LOSS**
- Properties of Jet-driven Molecular Outflows. *Colin R. Masson & Lawrence M. Chernin*. 414, 230, 172-G10 (1993)
- LS II +34°26 is a Low-Mass Post-Asymptotic Giant Branch B Supergiant and Not a Massive Population I B Star Located near the Outer Edge of the Galaxy. *M. Parthasarathy*. 414, L109, 186-A7 (1993)
- Winds in Central Stars of Planetary Nebulae. *A. Modigliani, P. Patriarchi, & M. Perinotto*. 415, 258, 188-B12 (1993)
- Ultraviolet Observations of Selective Wind Eclipses in γ Velorum and Evidence for Colliding Winds. *N. St-Louis, A. J. Willis, & I. R. Stevens*. 415, 298, 188-F8 (1993)
- The "Type IIb" Supernova 1993J in M81: A Close Relative of Type Ib Supernovae. *Alexei V. Filippenko, Thomas Matheson, & Luis C. Ho*. 415, L103, 200-A8 (1993)
- On the Origin of the Eclipsing Pulsar PSR B1718-19 and Its Wind. *R. A. M. J. Wijers & B. Paczyński*. 415, L115, 200-C1 (1993)
- Atomic Carbon in the Envelope of IRC +10216. *Jocelyn Keene, K. Young, T. G. Phillips, Thomas H. Büttgenbach, & John E. Carlstrom*. 415, L131, 200-E1 (1993)
- Stellar Mass Loss in Elliptical Galaxies and the Fueling of Active Galactic Nuclei. *Paolo Padovani & Francesca Matteucci*. 416, 26, 201-D2 (1993)
- The Asymmetric Envelope of γ Cassiopeiae Observed with the Mk III Optical Interferometer. *A. Quirrenbach, C. A. Hummel, D. F. Buscher, J. T. Armstrong, D. Mozurkewich, & N. M. Elias II*. 416, L25, 207-D7 (1993)
- STARS: NEUTRON**
- Normal Modes of Relativistic Stars in Slow Rotation Limit. *Yasufumi Kojima*. 414, 247, 173-B3 (1993)
- The Luminosity Dependence of the X-Ray Spectrum of the Transient 42 Second Pulsar EXO 2030+375. *A. P. Reynolds, A. N. Parmar, & N. E. White*. 414, 302, 173-F9 (1993)
- The QCD Phase Transition and Supernova Core Collapse. *N. A. Gentile, M. B. Aufderheide, G. J. Mathews, F. D. Swesty, & G. M. Fuller*. 414, 701, 180-A3 (1993)
- A Hydrodynamical Model for the Explosion of a Neutron Star Just below the Minimum Mass. *Monica Colpi, Stuart L. Shapiro, & Saul A. Teukolsky*. 414, 717, 180-B10 (1993)
- ROSAT High Resolution Imager Observations of PSR 0656+14. *S. B. Anderson, F. A. Córdova, G. G. Pavlov, C. R. Robinson, & R. J. Thompson, Jr.*. 414, 867, 182-A12 (1993)
- Vortex Pinning by Quenched Randomness in Neutron Stars. *Eric Chevalier*. 414, L113, 186-A13 (1993)
- Soft X-Ray Properties of the Geminga Pulsar. *J. P. Halpern & M. Ruderman*. 415, 286, 188-E8 (1993)
- Neutrino Emission from the Bubble Phase of Stellar Nuclear Matter. *L. B. Leinson*. 415, 759, 197-C8 (1993)
- High-Density Matter in the Chiral Sigma Model. *Pradip K. Sahu, Rahul Basu, & Bhaskar Datta*. 416, 267, 204-D6 (1993)
- Thomas-Fermi Calculations of Atoms and Matter in Magnetic Neutron Stars: Effects of Higher Landau Bands. *Ö. E. Rognvaldsson, I. Fushiki, E. H. Gudmundsson, C. J. Pethick, & J. Yngvason*. 416, 276, 204-E3 (1993)
- Gravitational Radiation from Nonaxisymmetric Collisions of Neutron Stars. *Joan M. Centrella & Stephen L. W. McMillan*. 416, 719, 212-C10 (1993)
- Finite-Velocity Effects on Atoms in Strong Magnetic Fields and Implications for Neutron Star Atmospheres. *G. G. Pavlov & P. Mészáros*. 416, 752, 212-F8 (1993)
- STARS: NOVAE, CATAclysmic VARIABLES**
- Extreme Ultraviolet Explorer Observations of the Magnetic Cataclysmic Variable RE 1938-461. *John K. Warren, John V. Vallerger, Christopher W. Mauche, Koji Mukai, & Oswald H. W. Siegmund*. 414, L69, 185-D2 (1993)
- On the Interpretation of the Ultraviolet Spectra of Symbiotic Stars and Recurrent Novae. *I. Steven N. Shore & Jason P. Aufdenberg*. 416, 355, 205-D10 (1993)

STARS: OSCILLATIONS

Normal Modes of Relativistic Stars in Slow Rotation Limit. *Yasufumi Kojima*. 414, 247, 173-B3 (1993)

On Cepheids at Maximum and Minimum Light. *Norman R. Simon, Shashi M. Kanbur, & Dimitri Mihalas*. 414, 310, 173-G5 (1993)

Equidistribution of Energy and Other Quantities in Oscillating Systems. *Charles L. Wolff*. 414, 892, 182-D4 (1993)

Discrete High-Frequency p -Modes as Probes of Structures in the Chromosphere, Transition Region, and Lower Corona of the Sun. *Yu-Qing Lou*. 414, L141, 186-E1 (1993)

Cepheid Velocity Curves from Lines of Different Excitation and Ionization. I. Observations. *R. Paul Butler*. 415, 323, 189-A7 (1993)

STARS: PECULIAR

Diffusion of Lithium and Beryllium in Evolving, Nonrotating Main-Sequence A and F Stars. *Jacques Richer & Georges Michaud*. 416, 312, 205-A5 (1993)

HR 1362: The Evolved 53 Camelopardalis. *K. Stepień*. 416, 368, 205-E11 (1993)

STARS: PLANETARY SYSTEMS

Formation of Planets around Pulsars. *M. Banit, M. A. Ruderman, J. Shaham, & J. H. Applegate*. 415, 779, 197-E6 (1993)

STARS: POPULATION II

Evidence for a Dispersion in the Lithium Abundances of Extreme Halo Stars. *Constantine P. Deliyannis, M. H. Pinsonneault, & Douglas K. Duncan*. 414, 740, 180-D10 (1993)

Abundances of Four Ultra-Metal-Deficient Stars. *John E. Norris, Ruth C. Peterson, & Timothy C. Beers*. 415, 797, 197-F13 (1993)

STARS: PRE-MAIN-SEQUENCE

Properties of Jet-driven Molecular Outflows. *Colin R. Masson & Lawrence M. Chernin*. 414, 230, 172-G10 (1993)

Upper Limits to the Detection of Ammonia from Protoplanetary Disks around HL Tauri and L1551-IRS 5. *José F. Gómez, José M. Torrelles, Paul T. P. Ho, Luis F. Rodríguez, & Jorge Cantó*. 414, 333, 174-B6 (1993)

The Embedded Young Stars in the Taurus-Auriga Molecular Cloud. I. Models for Spectral Energy Distributions. *Scott J. Kenyon, Nuria Calvet, & Lee Hartmann*. 414, 676, 179-F1 (1993)

The Contribution of Disks and Envelopes to the Millimeter Continuum Emission from Very Young Low-Mass Stars. *S. Terebey, C. J. Chandler, & P. André*. 414, 759, 180-F6 (1993)

The Embedded Young Stars in the Taurus-Auriga Molecular Cloud. II. Models for Scattered Light Images. *Scott J. Kenyon, Barbara A. Whitney, Mercedes Gomez, & Lee Hartmann*. 414, 773, 180-G9 (1993)

Disks around Pre-Main-Sequence Binary Systems: The Case of Haro 6-10. *François Ménard, Jean-Louis Monin, Françoise Angelucci, & Daniel Rouan*. 414, L117, 186-B5 (1993)

Observations of Entrainment and Time Variability in the HH 47 Jet. *Patrick Hartigan, Jon A. Morse, Steve Heathcote, & Gerald Cecil*. 414, L121, 186-B11 (1993)

The Triple Radio Continuum Source in Serpens: The Birth of a Herbig-Haro System? *S. Curiel, L. F. Rodríguez, J. M. Moran, & J. Cantó*. 415, 191, 187-D5 (1993)

Molecular Line Emission Models of Herbig-Haro Objects. II. HCO⁺ Emission. *Mark G. Wolfire & Arieh Königl*. 415, 204, 187-E6 (1993)

Detection of Accreting Gas toward HD 45677: A Newly Recognized, Herbig Be Proto-Planetary System. *C. A. Grady, K. S. Bjorkman, D. Shepherd, R. E. Schulte-Ladbeck, M. R. Pérez, D. de Winter, & P. S. Thé*. 415, L39, 192-B6 (1993)

Hubble Space Telescope Images of the Subarcsecond Jet in DG Tauri. *J. Kepner, P. Hartigan, C. Yang, & S. Strom*. 415, L119, 200-C8 (1993)

Boundary Layers in Pre-Main-Sequence Accretion Disks. *Robert Popham, Ramesh Narayan, Lee Hartmann, & Scott Kenyon*. 415, L127, 200-D9 (1993)

HH 80-81: A Highly Collimated Herbig-Haro Complex Powered by a Massive Young Star. *J. Martí, L. F. Rodríguez, & B. Reipurth*. 416, 208, 203-F1 (1993)

Gravitational Collapse of an Isothermal Sphere. *Prudence N. Foster & Roger A. Chevalier*. 416, 303, 204-G8 (1993)

ROSAT X-Ray Study of the Chamaeleon I Dark Cloud. I. The Stellar Population. *Eric D. Feigelson, Sophie Casanova, Thierry Montmerle, & Jean Guibert*. 416, 623, 211-B8 (1993)

Ultraviolet Spectroscopy of Herbig-Haro Objects: Spatial Structure, Spectroscopic Diagnostics, and Variability. *K.-H. Böhm, A. Noriega-Crespo, & J. Solf*. 416, 647, 211-D11 (1993)

STARS: PULSARS: GENERAL

Focusing of Alfvénic Wave Power in the Context of Gamma-Ray Burst Emissivity. *Marco Fatuzzo & Fulvio Melia*. 414, L89, 185-F7 (1993)

Polarization Changes of Radiation through Stimulated Raman Scattering. *R. T. Gangadhara & V. Krishan*. 415, 505, 194-B6 (1993)

Formation of Planets around Pulsars. *M. Banit, M. A. Ruderman, J. Shaham, & J. H. Applegate*. 415, 779, 197-E6 (1993)

Associating Young Pulsars and Supernova Remnants: PSR 1610-50 and the Case for High-Velocity Pulsars. *Patrizia A. Caraveo*. 415, L111, 200-B6 (1993)

Finite-Velocity Effects on Atoms in Strong Magnetic Fields and Implications for Neutron Star Atmospheres. *G. G. Pavlov & P. Mészáros*. 416, 752, 212-F8 (1993)

STARS: PULSARS: INDIVIDUAL

Name: Geminga

Soft X-Ray Properties of the Geminga Pulsar. *J. P. Halpern & M. Ruderman*. 415, 286, 188-E8 (1993)

Alphanumeric: 1620-26

Genesis of a Planet in Messier 4. *Steinn Sigurdsson*. 415, L43, 192-B13 (1993)

Alphanumeric: EXO 2030+375

The Luminosity Dependence of the X-Ray Spectrum of the Transient 42 Second Pulsar EXO 2030+375. *A. P. Reynolds, A. N. Parmar, & N. E. White*. 414, 302, 173-F9 (1993)

Alphanumeric: PSR 0656+14

ROSAT High Resolution Imager Observations of PSR 0656+14. *S. B. Anderson, F. A. Córdoba, G. G. Pavlov, C. R. Robinson, & R. J. Thompson, Jr.* 414, 867, 182-A12 (1993)

Alphanumeric: PSR 1610-50

Associating Young Pulsars and Supernova Remnants: PSR 1610-50 and the Case for High-Velocity Pulsars. *Patrizia A. Caraveo*. 415, L111, 200-B6 (1993)

Alphanumeric: PSR B1718-19

On the Origin of the Eclipsing Pulsar PSR B1718-19 and Its Wind. *R. A. M. J. Wijers & B. Paczyński*. 415, L115, 200-C1 (1993)

Alphanumeric: PSR J0943+22

A Search for Pulsars at High Galactic Latitudes. *S. E. Thorsett, W. T. S. Deich, S. R. Kulkarni, J. Navarro, & G. Vasisht*. 416, 182, 203-C10 (1993)

Alphanumeric: PSR J1246+22

A Search for Pulsars at High Galactic Latitudes. *S. E. Thorsett, W. T. S. Deich, S. R. Kulkarni, J. Navarro, & G. Vasisht*. 416, 182, 203-C10 (1993)

STARS: ROTATION

Normal Modes of Relativistic Stars in Slow Rotation Limit. *Yasufumi Kojima*. 414, 247, 173-B3 (1993)

An Interpretation of Cycle Periods of Stellar Chromospheric Activity. *W. H. Soon, S. L. Baliunas, & Q. Zhang*. 414, L33, 175-F6 (1993)

Self-gravitating Symplectic Systems. *G. Rosensteel*. 416, 291, 204-F7 (1993)

HR 1362: The Evolved 53 Camelopardalis. *K. Stepień*. 416, 368, 205-E11 (1993)

STARS: SUPERGIANTS

CNO Abundances and the Evolutionary Status of Three A-Type Supergiants. *Kim A. Venn*. 414, 316, 174-A1 (1993)

STARS: SUPERNOVAE: GENERAL

Spectropolarimetry of SN 1993J in NGC 3031. *Susan R. Trammell, Dean C. Hines, & J. Craig Wheeler*. 414, L21, 175-E2 (1993)

The QCD Phase Transition and Supernova Core Collapse. *N. A. Gentile, M. B. Aufderheide, G. J. Mathews, F. D. Swesty, & G. M. Fuller*. 414, 701, 180-A3 (1993)

An Analytical Model for the Plateau Stage of Type II Supernovae. *D. V. Popov*. 414, 712, 180-B3 (1993)

Type II Supernovae from 8–10 M_{\odot} Asymptotic Giant Branch Stars. *Masaaki Hashimoto, Kohichi Iwamoto, & Ken'ichi Nomoto.* 414, L105, 186-A1 (1993)

The Hubble Diagram in V for Supernovae of Type Ia and the Value of H_0 Therefrom. *Allan Sandage & G. A. Tammann.* 415, 1, 185-B1 (1993)

Convection above the Neutrinosphere in Type II Supernovae. *D. S. Miller, J. R. Wilson, & R. W. Mayle.* 415, 278, 188-D12 (1993)

The "Type IIb" Supernova 1993J in M81: A Close Relative of Type Ib Supernovae. *Alexei V. Filippenko, Thomas Matheson, & Luis C. Ho.* 415, L103, 200-A8 (1993)

On the Instability of Deflagration Fronts in White Dwarfs. *Eli Livne & David Arnett.* 415, L107, 200-B1 (1993)

Radio and Near-Infrared [Fe II] Emission from Active Galaxies. *Duncan A. Forbes & Martin J. Ward.* 416, 150, 202-G12 (1993)

A Theory of Supernova Explosions. *Adam Burrows & John Goshy.* 416, L75, 216-E1 (1993)

STARS: SUPERNOVAE: INDIVIDUAL

Alphanumeric: SN 1978K

SN 1978K: An Extraordinary Supernova in the Nearby Galaxy NGC 1313. *Stuart Ryder, Lister Staveley-Smith, Michael Dopita, Robert Petre, Edward Colbert, David Malin, & Eric Schlegel.* 416, 167, 203-B6 (1993)

Alphanumeric: SN 1986J

X-Rays from SN 1986J: Emission of a Shocked Clumpy Wind. *N. N. Chugai.* 414, L101, 185-G10 (1993)

Alphanumeric: SN 1987A

The Radiative Association of He^+ and He and H^+ and H . *P. C. Stancil, J. F. Babb, & A. Dalgarno.* 414, 672, 179-E8 (1993)

Alphanumeric: SN 1992A

SN 1992A: Ultraviolet and Optical Studies Based on *HST*, *IUE*, and CTIO Observations. *Robert P. Kirshner, David J. Jeffery, Bruno Leibundgut, Peter M. Challis, George Sonneborn, M. M. Phillips, N. B. Suntzeff, R. Chris Smith, P. Frank Winkler, Cláudia Winge, Mario Hamuy, Deidre A. Hunter, Katherine C. Roth, J. C. Blades, David Branch, Roger A. Chevalier, Claes Fransson, Nino Panagia, Robert V. Wagoner, J. Craig Wheeler, & Robert P. Harkness.* 415, 589, 195-B10 (1993)

Alphanumeric: SN 1993J

Spectropolarimetry of SN 1993J in NGC 3031. *Susan R. Trammell, Dean C. Hines, & J. Craig Wheeler.* 414, L21, 175-E2 (1993)

Type II Supernovae from 8–10 M_{\odot} Asymptotic Giant Branch Stars. *Masaaki Hashimoto, Kohichi Iwamoto, & Ken'ichi Nomoto.* 414, L105, 186-A1 (1993)

The "Type IIb" Supernova 1993J in M81: A Close Relative of Type Ib Supernovae. *Alexei V. Filippenko, Thomas Matheson, & Luis C. Ho.* 415, L103, 200-A8 (1993)

Interpretation of the Early Spectra of SN 1993J in M81. *E. Baron, P. H. Hauschildt, D. Branch, R. M. Wagner, S. J. Austin, A. V. Filippenko, & T. Matheson.* 416, L21, 207-D2 (1993)

STARS: VARIABLES: CEPHEIDS

On Cepheids at Maximum and Minimum Light. *Norman R. Simon, Shashi M. Kanbur, & Dimitri Mihalas.* 414, 310, 173-G5 (1993)

Cepheid Velocity Curves from Lines of Different Excitation and Ionization. I. Observations. *R. Paul Butler.* 415, 323, 189-A7 (1993)

Goodbye to Polaris the Cepheid. *J. D. Fernie, Karl W. Kamper, & S. Seager.* 416, 820, 213-F1 (1993)

STARS: WHITE DWARFS

Quantum Effects in Dense Coulombic Matter: Application to the Cooling of White Dwarfs. *Gilles Chabrier.* 414, 695, 179-G9 (1993)

On the Instability of Deflagration Fronts in White Dwarfs. *Eli Livne & David Arnett.* 415, L107, 200-B1 (1993)

Two New Extremely Iron-rich Hot DA White Dwarfs and the Nature of the EUV Opacity. *J. B. Holberg, M. A. Barstow, D. A. H. Buckley, A. Chen, S. Dreizler, M. C. Marsh, D. O'Donoghue, E. M. Sion, R. W. Tweedy, G. Vauclair, & K. Werner.* 416, 806, 213-D13 (1993)

Detection of the First Coronal X-Ray Source about a White Dwarf. *Thomas A. Fleming, Klaus Werner, & Martin A. Barstow.* 416, L79, 216-E6 (1993)

STARS: WOLF-RAYET

The "Baldwin Effect" in Wolf-Rayet Stars. *Patrick Morris, Peter S. Conti, Henry J. G. L. M. Lamers, & Gloria Koenigsberger.* 414, L25, 175-E7 (1993)

The Spectrum of EZ Canis Majoris (HD 50896) to the Lyman Limit with the Hopkins Ultraviolet Telescope. *Stephan R. McCandless, Richard H. Buss, Jr., William P. Blair, Charles W. Bowers, Arthur F. Davidsen, Paul D. Feldman, & Jeffrey W. Kruk.* 416, 372, 205-F3 (1993)

SUN: ABUNDANCES

Elemental Abundances in the Upper Solar Atmosphere of Quiet and Coronal Hole Regions ($T_e \approx 4.3 \times 10^5$ K). *U. Feldman & K. G. Widing.* 414, 381, 174-F9 (1993)

Nonphotospheric Abundances in a Solar Active Region. *K. G. Widing & U. Feldman.* 416, 392, 206-A1 (1993)

SUN: ACTIVITY

Do p -Mode Frequency Shifts Suggest a Hotter Chromosphere at Solar Maximum? *Rekha Jain & B. Roberts.* 414, 898, 182-D12 (1993)

Understanding the Rotation of Coronal Holes. *Y.-M. Wang & N. R. Sheeley, Jr.* 414, 916, 182-F7 (1993)

The Center-to-Limb Brightness Variation of the Sun at $\lambda = 850$ Microns. *T. S. Bastian, M. W. Ewell, Jr., & H. Zirin.* 415, 364, 189-D13 (1993)

Nonphotospheric Abundances in a Solar Active Region. *K. G. Widing & U. Feldman.* 416, 392, 206-A1 (1993)

SUN: ATMOSPHERE

Three-dimensional Magnetohydrodynamics of the Emerging Magnetic Flux in the Solar Atmosphere. *R. Matsumoto, T. Tajima, K. Shibata, & M. Kaisig.* 414, 357, 174-D8 (1993)

The White-Light Flare of 1982 June 15: A Midchromospheric Kernel. *Pablo J. D. Mauas.* 414, 928, 182-G10 (1993)

The Source of 5 Minute Period Photospheric Umbral Oscillations. *M. J. Penn & B. J. Labonte.* 415, 383, 189-F7 (1993)

SUN: CHROMOSPHERE

Chromospheric Heating by Acoustic Shock Waves. *Stuart D. Jordan.* 414, 337, 174-B12 (1993)

Dynamics of the Solar Chromosphere. I. Long-Period Network Oscillations. *B. W. Lites, R. J. Rutten, & W. Kalkofen.* 414, 345, 174-C8 (1993)

Do p -Mode Frequency Shifts Suggest a Hotter Chromosphere at Solar Maximum? *Rekha Jain & B. Roberts.* 414, 898, 182-D12 (1993)

The White-Light Flare of 1982 June 15: A Midchromospheric Kernel. *Pablo J. D. Mauas.* 414, 928, 182-G10 (1993)

Discrete High-Frequency p -Modes as Probes of Structures in the Chromosphere, Transition Region, and Lower Corona of the Sun. *Yu-Qing Lou.* 414, L141, 186-E1 (1993)

The Center-to-Limb Brightness Variation of the Sun at $\lambda = 850$ Microns. *T. S. Bastian, M. W. Ewell, Jr., & H. Zirin.* 415, 364, 189-D13 (1993)

Semiempirical Flare Models with Chromospheric Condensation. *W. Q. Gan, E. Rieger, & C. Fang.* 416, 886, 214-D10 (1993)

SUN: CORONA

Elemental Abundances in the Upper Solar Atmosphere of Quiet and Coronal Hole Regions ($T_e \approx 4.3 \times 10^5$ K). *U. Feldman & K. G. Widing.* 414, 381, 174-F9 (1993)

Long-Term Containment of Energetic Particles in Coronal Loops. *Yun-Tung Lau, Theodore G. Northrop, & John M. Finn.* 414, 908, 182-E10 (1993)

Understanding the Rotation of Coronal Holes. *Y.-M. Wang & N. R. Sheeley, Jr.* 414, 916, 182-F7 (1993)

Discrete High-Frequency p -Modes as Probes of Structures in the Chromosphere, Transition Region, and Lower Corona of the Sun. *Yu-Qing Lou.* 414, L141, 186-E1 (1993)

Large-Scale Coronal Temperature and Density Distributions, 1984–1992. *M. Guhathakurta, R. R. Fisher, & R. C. Altrock.* 414, L145, 186-E7 (1993)

Coronal Heating by the Resonant Absorption of Alfvén Waves: Importance of the Global Mode and Scaling Laws. *Richard S. Steinolfson & Joseph M. Davila.* 415, 354, 189-D1 (1993)

1 Sun: Corona-Sun: Solar Wind

A Class of Three-dimensional Isothermal Laminated Equilibria and Their Stability. *Y. P. Chou, B. C. Low, & A. Bhattacharjee.* 416, 379, 205-F12 (1993)

A Linear Solution for Magnetic Reconnection Driven by Converging or Diverging Footpoint Motions. *George Roumeliotis & Ronald L. Moore.* 416, 386, 205-G7 (1993)

Quasi-periodic Particle Injection into Coronal Loops. *Markus J. Aschwanden, Arnold O. Benz, Brian R. Dennis, & Victor Gaizauskas.* 416, 857, 214-B5 (1993)

SUN: FACULAE, PLAGES

The Center-to-Limb Brightness Variation of the Sun at $\lambda = 850$ Microns. *T. S. Bastian, M. W. Ewell, Jr., & H. Zirin.* 415, 364, 189-D13 (1993)

SUN: FLARES

Anomalous Resistivity and the Evolution of Magnetic Field Topology. *E. N. Parker.* 414, 389, 174-G5 (1993)

Long-Term Containment of Energetic Particles in Coronal Loops. *Yun-Tung Lau, Theodore G. Northrop, & John M. Finn.* 414, 908, 182-E10 (1993)

The White-Light Flare of 1982 June 15: A Midchromospheric Kernel. *Pablo J. D. Mauas.* 414, 928, 182-G10 (1993)

Ion Acceleration in Impulsive Solar Flares. *Jürgen Steinacker, Uwe Jaekel, & Reinhard Schlickeiser.* 415, 342, 189-C1 (1993)

A Linear Solution for Magnetic Reconnection Driven by Converging or Diverging Footpoint Motions. *George Roumeliotis & Ronald L. Moore.* 416, 386, 205-G7 (1993)

The 1992 January 5 Flare at 13.3 UT: Observations from YOHKO. *G. A. Doschek, K. T. Strong, R. D. Bentley, C. M. Brown, J. L. Culhane, A. Fludra, E. Hiei, J. Lang, J. T. Mariska, K. J. H. Phillips, C. D. Pike, A. C. Sterling, T. Watanabe, L. W. Acton, M. E. Bruner, T. Hirayama, S. Tsuneta, E. Rolli, T. Kosugi, M. Yoshimori, H. S. Hudson, T. R. Metcalf, J.-P. Wuelser, Y. Uchida, & Y. Ogawara.* 416, 845, 214-A1 (1993)

Quasi-periodic Particle Injection into Coronal Loops. *Markus J. Aschwanden, Arnold O. Benz, Brian R. Dennis, & Victor Gaizauskas.* 416, 857, 214-B5 (1993)

Semiempirical Flare Models with Chromospheric Condensation. *W. Q. Gan, E. Rieger, & C. Fang.* 416, 886, 214-D10 (1993)

Temperature and Density Structure of the 1991 November 2 Flare Observed by the YOHKO Soft X-Ray Telescope and Hard X-Ray Telescope. *James M. McTiernan, Sharad R. Kane, Jon M. Loran, James R. Lemen, Loren W. Acton, Hirohisa Hara, Saku Tsuneta, & Takeo Kosugi.* 416, L91, 216-F6 (1993)

SUN: FUNDAMENTAL PARAMETERS

Accurate Measurement of the Geometry for a Full-Disk Solar Image and Estimation of the Observational Point Spread Function. *C. G. Toner & S. M. Jefferies.* 415, 852, 198-E11 (1993)

SUN: INTERIOR

Are the 1986-1988 Changes in Solar Free-Oscillation Frequency Splitting Significant? *Douglas Gough & Philip B. Stark.* 415, 376, 189-E13 (1993)

SUN: MAGNETIC FIELDS

Three-dimensional Magnetohydrodynamics of the Emerging Magnetic Flux in the Solar Atmosphere. *R. Matsumoto, T. Tajima, K. Shibata, & M. Kaisig.* 414, 357, 174-D8 (1993)

Understanding the Rotation of Coronal Holes. *Y.-M. Wang & N. R. Sheeley, Jr.* 414, 916, 182-F7 (1993)

Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun. *M. Amenomori, Z. Cao, L. K. Ding, Z. Y. Feng, K. Hibino, N. Hotta, Q. Huang, A. X. Huo, H. G. Jia, G. Z. Jiang, S. Q. Jiao, F. Kajino, K. Kasahara, Labaciren, D. M. Mei, L. Meng, X. R. Meng, Mimaciren, K. Mizutani, J. Mu, H. Nanjo, M. Nishizawa, Nusang, A. Oguro, M. Ohnishi, I. Ohta, T. Ouchi, J. R. Ren, T. Saito, M. Sakata, Z. Z. Shi, M. Shibata, T. Shirai, H. Sugimoto, X. X. Sun, K. Taira, Y. H. Tan, N. Tateyama, S. Torii, H. Wang, C. Z. Wen, Y. Yamamoto, X. Y. Yao, G. C. Yu, P. Yuan, T. Yuda, J. G. Zeng, C. S. Zhang, H. M. Zhang, L. Zhang, Zhasang, Zhaxiciren, & W. D. Zhou (The Tibet AS γ Collaboration).* 415, L147, 200-G1 (1993)

A Linear Solution for Magnetic Reconnection Driven by Converging or Diverging Footpoint Motions. *George Roumeliotis & Ronald L. Moore.* 416, 386, 205-G7 (1993)

The 1992 January 5 Flare at 13.3 UT: Observations from YOHKO. *G. A. Doschek, K. T. Strong, R. D. Bentley, C. M. Brown, J. L. Culhane, A. Fludra, E. Hiei, J. Lang, J. T. Mariska, K. J. H. Phillips, C. D. Pike, A. C. Sterling, T. Watanabe, L. W. Acton, M. E. Bruner, T. Hirayama, S. Tsuneta, E. Rolli, T. Kosugi, M. Yoshimori, H. S. Hudson, T. R. Metcalf, J.-P. Wuelser, Y. Uchida, & Y. Ogawara.* 416, 845, 214-A1 (1993)

SUN: OSCILLATIONS

Dynamics of the Solar Chromosphere. I. Long-Period Network Oscillations. *B. W. Lites, R. J. Rutten, & W. Kalkofen.* 414, 345, 174-C8 (1993)

Equidistribution of Energy and Other Quantities in Oscillating Systems. *Charles L. Wolff.* 414, 892, 182-D4 (1993)

Do p -Mode Frequency Shifts Suggest a Hotter Chromosphere at Solar Maximum? *Rekha Jain & B. Roberts.* 414, 898, 182-D12 (1993)

Discrete High-Frequency p -Modes as Probes of Structures in the Chromosphere, Transition Region, and Lower Corona of the Sun. *Yu-Qing Lou.* 414, L141, 186-E1 (1993)

Are the 1986-1988 Changes in Solar Free-Oscillation Frequency Splitting Significant? *Douglas Gough & Philip B. Stark.* 415, 376, 189-E13 (1993)

The Source of 5 Minute Period Photospheric Umbral Oscillations. *M. J. Penn & B. J. LaBonte.* 415, 383, 189-F7 (1993)

Direct Mapping of Solar Acoustic Power. *C. G. Toner & B. J. LaBonte.* 415, 847, 198-D6 (1993)

Accurate Measurement of the Geometry for a Full-Disk Solar Image and Estimation of the Observational Point Spread Function. *C. G. Toner & S. M. Jefferies.* 415, 852, 198-E11 (1993)

SUN: PARTICLE EMISSION

Ion Acceleration in Impulsive Solar Flares. *Jürgen Steinacker, Uwe Jaekel, & Reinhard Schlickeiser.* 415, 342, 189-C1 (1993)

Quasi-periodic Particle Injection into Coronal Loops. *Markus J. Aschwanden, Arnold O. Benz, Brian R. Dennis, & Victor Gaizauskas.* 416, 857, 214-B5 (1993)

SUN: RADIO RADIATION

The Center-to-Limb Brightness Variation of the Sun at $\lambda = 850$ Microns. *T. S. Bastian, M. W. Ewell, Jr., & H. Zirin.* 415, 364, 189-D13 (1993)

Evaluation of Emission Mechanisms at ω_{pe} Using *Ulysses* Observations of Type III Bursts. *G. Thejappa, D. Lengyel-Frey, R. G. Stone, & M. L. Goldstein.* 416, 831, 213-G1 (1993)

Quasi-periodic Particle Injection into Coronal Loops. *Markus J. Aschwanden, Arnold O. Benz, Brian R. Dennis, & Victor Gaizauskas.* 416, 857, 214-B5 (1993)

SUN: ROTATION

Understanding the Rotation of Coronal Holes. *Y.-M. Wang & N. R. Sheeley, Jr.* 414, 916, 182-F7 (1993)

Are the 1986-1988 Changes in Solar Free-Oscillation Frequency Splitting Significant? *Douglas Gough & Philip B. Stark.* 415, 376, 189-E13 (1993)

SUN: SOLAR-TERRESTRIAL RELATIONS

Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun. *M. Amenomori, Z. Cao, L. K. Ding, Z. Y. Feng, K. Hibino, N. Hotta, Q. Huang, A. X. Huo, H. G. Jia, G. Z. Jiang, S. Q. Jiao, F. Kajino, K. Kasahara, Labaciren, D. M. Mei, L. Meng, X. R. Meng, Mimaciren, K. Mizutani, J. Mu, H. Nanjo, M. Nishizawa, Nusang, A. Oguro, M. Ohnishi, I. Ohta, T. Ouchi, J. R. Ren, T. Saito, M. Sakata, Z. Z. Shi, M. Shibata, T. Shirai, H. Sugimoto, X. X. Sun, K. Taira, Y. H. Tan, N. Tateyama, S. Torii, H. Wang, C. Z. Wen, Y. Yamamoto, X. Y. Yao, G. C. Yu, P. Yuan, T. Yuda, J. G. Zeng, C. S. Zhang, H. M. Zhang, L. Zhang, Zhasang, Zhaxiciren, & W. D. Zhou (The Tibet AS γ Collaboration).* 415, L147, 200-G1 (1993)

SUN: SOLAR WIND

A Two-Region Model of the Solar Wind with Collisionless Electron Heat Flux. *P. Alexander.* 414, 372, 174-E11 (1993)

Elemental Abundances in the Upper Solar Atmosphere of Quiet and Coronal Hole Regions ($T_e \approx 4.3 \times 10^5$ K). *U. Feldman & K. G. Widing.* 414, 381, 174-F9 (1993)

Direct Evidence of the Interplanetary Magnetic Field Effect on the Cosmic-Ray Shadow by the Sun. *M. Amenomori, Z. Cao, L. K.*

- Ding, Z. Y. Feng, K. Hibino, N. Hotta, Q. Huang, A. X. Huo, H. G. Jia, G. Z. Jiang, S. Q. Jiao, F. Kajino, K. Kasahara, Labaciren, D. M. Mei, L. Meng, X. R. Meng, Mimaciren, K. Mizutani, J. Mu, H. Nanjo, M. Nishizawa, Nusang, A. Oguro, M. Ohnishi, I. Ohta, T. Ouchi, J. R. Ren, T. Saito, M. Sakata, Z. Z. Shi, M. Shibata, T. Shirai, H. Sugimoto, X. X. Sun, K. Taira, Y. H. Tan, N. Tateyama, S. Torii, H. Wang, C. Z. Wen, Y. Yamamoto, X. Y. Yao, G. C. Yu, P. Yuan, T. Yuda, J. G. Zeng, C. S. Zhang, H. M. Zhang, L. Zhang, Zhasang, Zhaxiciren, & W. D. Zhou (*The Tibet AS γ Collaboration*). 415, L147, 200-G1 (1993)
- Evaluation of Emission Mechanisms at ω_p Using *Ulysses* Observations of Type III Bursts. G. Thejappa, D. Lengyel-Frey, R. G. Stone, & M. L. Goldstein. 416, 831, 213-G1 (1993)
- SUN: SUNSPOTS**
- The Source of 5 Minute Period Photospheric Umbral Oscillations. M. J. Penn & B. J. LaBonte. 415, 383, 189-F7 (1993)
- A High-Resolution Study of Inhomogeneities in Sunspot Umbrae. Michal Sobotta, José A. Bonet, & Manuel Vázquez. 415, 832, 198-B13 (1993)
- The Magnetohydrodynamics of Umbral Flux Tubes. II. Spectroscopic Properties. Detlev Degenhardt & Bruce W. Lites. 416, 875, 214-C11 (1993)
- SUN: TRANSITION REGION**
- Discrete High-Frequency p -Modes as Probes of Structures in the Chromosphere, Transition Region, and Lower Corona of the Sun. Yu-Qing Lou. 414, L141, 186-E1 (1993)
- SUN: UV RADIATION**
- Nonphotospheric Abundances in a Solar Active Region. K. G. Widing & U. Feldman. 416, 392, 206-A1 (1993)
- SUN: X-RAYS, GAMMA RAYS**
- Long-Term Containment of Energetic Particles in Coronal Loops. Yun-Tung Lau, Theodore G. Northrop, & John M. Finn. 414, 908, 182-E10 (1993)
- The 1992 January 5 Flare at 13.3 UT: Observations from YOHKO. G. A. Doschek, K. T. Strong, R. D. Benley, C. M. Brown, J. L. Culhane, A. Fludra, E. Hiei, J. Lang, J. T. Mariska, K. J. H. Phillips, C. D. Pike, A. C. Sterling, T. Watanabe, L. W. Acton, M. E. Bruner, T. Hirayama, S. Tsuneta, E. Rolli, T. Kosugi, M. Yoshimori, H. S. Hudson, T. R. Metcalf, J.-P. Wuelser, Y. Uchida, & Y. Ogawara. 416, 845, 214-A1 (1993)
- Quasi-periodic Particle Injection into Coronal Loops. Markus J. Aschwanden, Arnold O. Benz, Brian R. Dennis, & Victor Gaizauskas. 416, 857, 214-B5 (1993)
- Temperature and Density Structure of the 1991 November 2 Flare Observed by the YOHKO Soft X-Ray Telescope and Hard X-Ray Telescope. James M. McTiernan, Sharad R. Kane, Jon M. Loran, James R. Lemen, Loren W. Acton, Hirohisa Hara, Saku Tsuneta, & Takeo Kosugi. 416, L91, 216-F6 (1993)
- SURVEYS**
- The Faintest Stars: From Schmidt Plates to Luminosity Functions. C. G. Tinney, J. N. Reid, & J. R. Mould. 414, 254, 173-B12 (1993)
- Spectroscopic Study of the CfA Sample of Seyfert Galaxies. Donald E. Osterbrock & André Martel. 414, 552, 178-B2 (1993)
- Milliarcsecond Polarization Structure of 24 Objects from the Pearson-Readhead Sample of Bright Extragalactic Radio Sources. I. The Images. T. V. Cawthorne, J. F. C. Wardle, D. H. Roberts, D. C. Gabuzda, & L. F. Brown. 416, 496, 209-D11 (1993)
- TECHNIQUES: IMAGE PROCESSING**
- Restoration of Astronomical Images by Iterative Blind Deconvolution. Stuart M. Jefferies & Julian C. Christou. 415, 862, 198-F9 (1993)
- TECHNIQUES: INTERFEROMETRIC**
- Accurate Measurement of the Geometry for a Full-Disk Solar Image and Estimation of the Observational Point Spread Function. C. G. Toner & S. M. Jefferies. 415, 852, 198-E11 (1993)
- The Asymmetric Envelope of γ Cassiopeiae Observed with the Mk III Optical Interferometer. A. Quirrenbach, C. A. Hummel, D. F. Buscher, J. T. Armstrong, D. Mozurkewich, & N. M. Elias II. 416, L25, 207-D7 (1993)
- Milliarcsecond Polarization Structure of 24 Objects from the Pearson-Readhead Sample of Bright Extragalactic Radio Sources. I. The Images. T. V. Cawthorne, J. F. C. Wardle, D. H. Roberts, D. C. Gabuzda, & L. F. Brown. 416, 496, 209-D11 (1993)
- Detection of the Angular Expansion Rate and Determination of the Distance of the Planetary Nebula NGC 6302. Yolanda Gómez, Luis F. Rodríguez, & James M. Moran. 416, 620, 211-B1 (1993)
- TECHNIQUES: PHOTOMETRIC**
- The Faintest Stars: The Luminosity and Mass Functions at the Bottom of the Main Sequence. Christopher G. Tinney. 414, 279, 173-D12 (1993)
- TECHNIQUES: POLARIMETRIC**
- Spectropolarimetry of SN 1993J in NGC 3031. Susan R. Trammell, Dean C. Hines, & J. Craig Wheeler. 414, L21, 175-E2 (1993)
- TECHNIQUES: RADIAL VELOCITIES**
- The Radial Velocities of Planetary Nebulae in NGC 3379. Robin Ciardullo, George H. Jacoby, & Herwig B. Dejonghe. 414, 454, 176-G3 (1993)
- TECHNIQUES: SPECTROSCOPIC**
- Spectropolarimetry of SN 1993J in NGC 3031. Susan R. Trammell, Dean C. Hines, & J. Craig Wheeler. 414, L21, 175-E2 (1993)
- Detection of [O III] λ 5007 Emission from the Io Plasma Torus. Nicolas Thomas. 414, L41, 175-G2 (1993)
- Ultraviolet Transitions of Low Condensation Temperature Heavy Elements and New Data for Interstellar Arsenic, Selenium, Tellurium, and Lead. Jason A. Cardelli, S. R. Federman, David L. Lambert, & C. E. Theodosiou. 416, L41, 207-F5 (1993)
- The Mount Wilson Observatory Metallicity Index, C_{RV} : Comparison with Other Photometric Systems. W. H. Soon, Q. Zhang, S. L. Balinas, & R. L. Kurucz. 416, 787, 213-C1 (1993)
- TELESCOPES**
- In-Flight Performance and Preliminary Results from the Far Ultraviolet Space Telescope (Faust) Flown on ATLAS-1. Stuart Bowyer, Timothy P. Sasseen, Michael Lampton, & Xiaoyi Wu. 415, 875, 198-G12 (1993)
- TURBULENCE**
- Turbulent Convection with Overshooting: Reynolds Stress Approach. II. V. M. Canuto. 416, 331, 205-B12 (1993)
- ULTRAVIOLET: GALAXIES**
- Ultraviolet Photometry of OB Associations in M31. Jesse K. Hill, Joan E. Isensee, Ralph C. Bohlin, Robert W. O'Connell, Morton S. Roberts, Andrew M. Smith, & Theodore P. Stecher. 414, L9, 175-C11 (1993)
- Statistics of QSO Broad Emission-Line Profiles. I. The C IV λ 1549 Line and the λ 1400 Feature. Beverley J. Wills, M. S. Brotherton, D. Fang, Charles C. Steidel, & Wallace L. W. Sargent. 415, 563, 194-G8 (1993)
- Lyman-Alpha Emission from Galaxies. Stéphane Charlot & S. Michael Fall. 415, 580, 195-A13 (1993)
- First Ultraviolet Spectropolarimetry of Radio-selected BL Lacertae Objects. Paul S. Smith, Richard G. Allen, & J. R. P. Angel. 415, L83, 199-F6 (1993)
- The Ultraviolet Continua of Blazars: A Reconsideration of IUE Archives. E. Pian & A. Treves. 416, 130, 202-E14 (1993)
- Variable C IV Absorption in the Seyfert Galaxy NGC 5548: A Connection to Broad Absorption Line Quasi-stellar Objects? J. Michael Shull & Elise R. Sachs. 416, 536, 210-A10 (1993)
- ULTRAVIOLET: GENERAL**
- Constraints on Axions from the Extragalactic Background Light. J. M. Overduin & P. S. Wesson. 414, 449, 176-F10 (1993)
- In-Flight Performance and Preliminary Results from the Far Ultraviolet Space Telescope (Faust) Flown on ATLAS-1. Stuart Bowyer, Timothy P. Sasseen, Michael Lampton, & Xiaoyi Wu. 415, 875, 198-G12 (1993)
- ULTRAVIOLET: INTERSTELLAR**
- On Graphite and the 2175 Å Extinction Profile. B. T. Draine & Sangeeta Malhotra. 414, 632, 179-B1 (1993)
- Oscillator Strengths of the Si II 181 Nanometer Resonance Multiplet. S. D. Bergeson & J. E. Lawler. 414, L137, 186-D9 (1993)
- Forbidden Velocity Gas Detected in Ultraviolet Interstellar Absorption toward Four Distant Inner Galaxy Stars. Todd M. Tripp, Kenneth R. Sembach, & Blair D. Savage. 415, 652, 196-A1 (1993)

- A Determination of the Distance to the High-Velocity Cloud Complex M. *Laura Danly, C. E. Albert, & K. D. Kuntz*. 416, L29, 207-D13 (1993)
- Ultraviolet Transitions of Low Condensation Temperature Heavy Elements and New Data for Interstellar Arsenic, Selenium, Tellurium, and Lead. *Jason A. Cardelli, S. R. Federman, David L. Lambert, & C. E. Theodosiou*. 416, L41, 207-F5 (1993)
- ULTRAVIOLET: SOLAR SYSTEM**
- Detection of [O II] $\lambda 2471$ from the Io Plasma Torus. *M. A. McGrath, P. D. Feldman, D. F. Strobel, H. W. Moos, & G. E. Ballester*. 415, L55, 192-D7 (1993)
- ULTRAVIOLET: STARS**
- A Search for Proton Beams during Flares on AU Microscopii. *R. D. Robinson, K. G. Carpenter, B. E. Woodgate, & S. P. Maran*. 414, 872, 182-B5 (1993)
- Extreme Ultraviolet Explorer Deep Survey Observations of a Large Flare on AU Microscopii. *Scott L. Cully, Oswald H. W. Siegmund, Peter W. Vedder, & John V. Valleria*. 414, L49, 185-B1 (1993)
- Extreme Ultraviolet Emission from Late-Type Stars: Initial Results from Extreme Ultraviolet Explorer. *Peter W. Vedder, Robert J. Patterer, Patrick Jelinsky, Alex Brown, & Stuart Bowyer*. 414, L61, 185-C5 (1993)
- Intense Extreme Ultraviolet Emission from the B Star ϵ Canis Majoris. *John V. Valleria, Peter W. Vedder, & Barry Y. Welsh*. 414, L65, 185-C11 (1993)
- Winds in Central Stars of Planetary Nebulae. *A. Modigliani, P. Piararchi, & M. Perinotto*. 415, 258, 188-B12 (1993)
- Ultraviolet Observations of Selective Wind Eclipses in γ Velorum and Evidence for Colliding Winds. *N. St-Louis, A. J. Willis, & I. R. Stevens*. 415, 298, 188-F8 (1993)
- Detection of Accreting Gas toward HD 45677: A Newly Recognized, Herbig Be Proto-Planetary System. *C. A. Grady, K. S. Bjorkman, D. Shepherd, R. E. Schulte-Ladbeck, M. R. Pérez, D. de Winter, & P. S. Thé*. 415, L39, 192-B6 (1993)
- SN 1992A: Ultraviolet and Optical Studies Based on HST, IUE, and CTIO Observations. *Robert P. Kirshner, David J. Jeffery, Bruno Leibundgut, Peter M. Challis, George Sonneborn, M. M. Phillips, N. B. Suntzeff, R. Chris Smith, P. Frank Winkler, Claudia Winge, Mario Hamuy, Deidre A. Hunter, Katherine C. Roth, J. C. Blades, David Branch, Roger A. Chevalier, Claes Fransson, Nino Panagia, Robert V. Wagoner, J. Craig Wheeler, & Robert P. Harkness*. 415, 589, 195-B10 (1993)
- In-Flight Performance and Preliminary Results from the Far Ultraviolet Space Telescope (Faust) Flown on ATLAS-1. *Stuart Bowyer, Timothy P. Sasseen, Michael Lampton, & Xiaoyi Wu*. 415, 875, 198-G12 (1993)
- On the Interpretation of the Ultraviolet Spectra of Symbiotic Stars and Recurrent Novae. *I. Steven N. Shore & Jason P. Aufdenberg*. 416, 355, 205-D10 (1993)
- The Spectrum of EZ Canis Majoris (HD 50896) to the Lyman Limit with the Hopkins Ultraviolet Telescope. *Stephan R. McCandliss, Richard H. Buss, Jr., William P. Blair, Charles W. Bowers, Arthur F. Davidsen, Paul D. Feldman, & Jeffrey W. Kruk*. 416, 372, 205-F3 (1993)
- Ultraviolet Spectroscopy of Herbig-Haro Objects: Spatial Structure, Spectroscopic Diagnostics, and Variability. *K.-H. Böhm, A. Noriega-Crespo, & J. Solf*. 416, 647, 211-D11 (1993)
- Two New Extremely Iron-rich Hot DA White Dwarfs and the Nature of the EUV Object. *J. B. Holberg, M. A. Barstow, D. A. H. Buckley, A. Chen, S. Dreizler, M. C. Marsh, D. O'Donoghue, E. M. Sion, R. W. Tweedy, G. Vauclair, & K. Werner*. 416, 806, 213-D13 (1993)
- X-RAYS: GALAXIES**
- Soft X-Ray Spectra of Seyfert 2 Galaxies. *John S. Mulchaey, Edward Colbert, Andrew S. Wilson, Richard F. Mushotzky, & Kimberly A. Weaver*. 414, 144, 171-G1 (1993)
- Active Galactic Nuclei Make the Cosmic X-Ray Background. *Andrzej A. Zdziarski, Piotr T. Zyci, & Julian H. Krolik*. 414, L81, 185-E8 (1993)
- X-Ray Variability of Active Galactic Nuclei: A Universal Power Spectrum with Luminosity-dependent Amplitude. *A. Lawrence & I. Papadakis*. 414, L85, 185-F1 (1993)
- Acceleration Efficiency in Nonthermal Sources and the Soft Gamma Rays from NGC 4151 Observed by OSSE and SIGMA. *Andrzej A. Zdziarski, Alan P. Lightman, & Andrzej Maciolek-Niedzwiecki*. 414, L93, 185-F13 (1993)
- X-Rays from SN 1986J: Emission of a Shocked Clumpy Wind. *N. N. Chugai*. 414, L101, 185-G10 (1993)
- On Cosmological Constraints from Statistics of X-Ray Clusters. *Hiroshi Hanami*. 415, 42, 185-E6 (1993)
- Distant Clusters of Galaxies Detected by X-Rays. *A. Cavaliere, S. Colafrancesco, & N. Menci*. 415, 50, 185-F1 (1993)
- The X-Ray Spectra of Cluster Cooling Flows. I. Optically Thin Models. *Michael W. Wise & Craig L. Sarazin*. 415, 58, 185-F10 (1993)
- The ROSAT Spectrum of 3C 351: A Warm Absorber in an X-Ray-"quiet" Quasar? *Fabrizio Fiore, Martin Elvis, Smita Mathur, Belinda J. Wilkes, & Jonathan C. McDowell*. 415, 129, 186-F1 (1993)
- The Relation between Velocity Dispersion and Temperature in Clusters: Limiting the Velocity Bias. *Lori M. Lubin & Neta A. Bahcall*. 415, L17, 191-G5 (1993)
- X-Ray Emission from the Starburst Galaxy IC 342. *Joel N. Bregman, Caroline V. Cox, & Kohji Tomisaka*. 415, L79, 199-E13 (1993)
- Unified Model for X-Ray- and Radio-selected BL Lacertae Objects. *A. Celotti, L. Maraschi, G. Ghisellini, A. Caccianiga, & T. Maccacaro*. 416, 118, 202-D13 (1993)
- The Iron K Line as a Probe of Beamed X-Ray Emission in Active Galactic Nuclei. *T. Yaqoob, B. McKernan, C. Done, P. J. Serlemisios, & K. A. Weaver*. 416, L5, 207-B7 (1993)
- The Complex, Gravitationally Lensed Arc System in the X-Ray-selected Cluster of Galaxies MS 0440+0204. *G. A. Luppino, I. M. Gioia, J. Annis, O. Le Fèvre, & F. Hammer*. 416, 444, 208-G8 (1993)
- X-RAYS: INTERSTELLAR**
- Hidden Supernova Remnants in the Large Magellanic Cloud II Complex N44. *You-Hua Chu, Mordecai-Mark Mac Low, Guillermo Garcia-Segura, Bart Wakker, & Robert C. Kennicutt, Jr.*. 414, 213, 172-F2 (1993)
- High-Resolution X-Ray Spectroscopy of the Supernova Remnant N132D. *Una Hwang, John P. Hughes, Claude R. Canizares, & Thomas H. Markert*. 414, 219, 172-F11 (1993)
- X-RAYS: STARS**
- The Luminosity Dependence of the X-Ray Spectrum of the Transient 42 Second Pulsar EXO 2030+375. *A. P. Reynolds, A. N. Parmar, & N. E. White*. 414, 302, 173-F9 (1993)
- X-Ray Emission at the Low-Mass End: Results from an Extensive Einstein Observatory Survey. *M. Barbera, G. Micela, S. Sciortino, F. R. Harnden, Jr., & R. Rosner*. 414, 846, 181-F10 (1993)
- ROSAT High Resolution Imager Observations of PSR 0656+14. *S. B. Anderson, F. A. Córdova, G. G. Pavlov, C. R. Robinson, & R. J. Thompson, Jr.*. 414, 867, 182-A12 (1993)
- Extreme Ultraviolet Explorer Observations of the Magnetic Cataclysmic Variable RE 1938-461. *John K. Warren, John V. Valleria, Christopher W. Mauche, Koji Mukai, & Oswald H. W. Siegmund*. 414, L69, 185-D2 (1993)
- A Tight Correlation between Radio and X-Ray Luminosities of M Dwarfs. *Manuel Güdel, Jürgen H. M. M. Schmitt, Jay A. Bookbinder, & Thomas A. Fleming*. 415, 236, 188-A1 (1993)
- Soft X-Ray Properties of the Geminga Pulsar. *J. P. Halpern & M. Ruderman*. 415, 286, 188-E8 (1993)
- The Evolution of Stellar Coronae: Initial Results from a ROSAT PSPC Observation of IC 2391. *Brian M. Patten & Theodore Simon*. 415, L123, 200-D1 (1993)
- ROSAT X-Ray Detection of ϵ Tauris: Revisiting the Coronal and Transition Region Emission of the Hyades Giants. *A. Collura, A. Maggio, G. Micela, S. Sciortino, F. R. Harnden, Jr., & R. Rosner*. 416, 204, 203-E8 (1993)
- SMM Observations of Gamma-Ray Transients. I. A Search for Variable Emission at MeV Energies from Five Galactic and Extragalactic Sources. *M. J. Harris, G. H. Share, M. D. Leising, & J. E. Grove*. 416, 601, 210-G8 (1993)
- ROSAT X-Ray Study of the Chamaeleon I Dark Cloud. I. The Stellar Population. *Eric D. Feigelson, Sophie Casanova, Thierry Montmerle, & Jean Guibert*. 416, 623, 211-B8 (1993)
- Detection of the First Coronal X-Ray Source about a White Dwarf. *Thomas A. Fleming, Klaus Werner, & Martin A. Barstow*. 416, L79, 216-E6 (1993)

